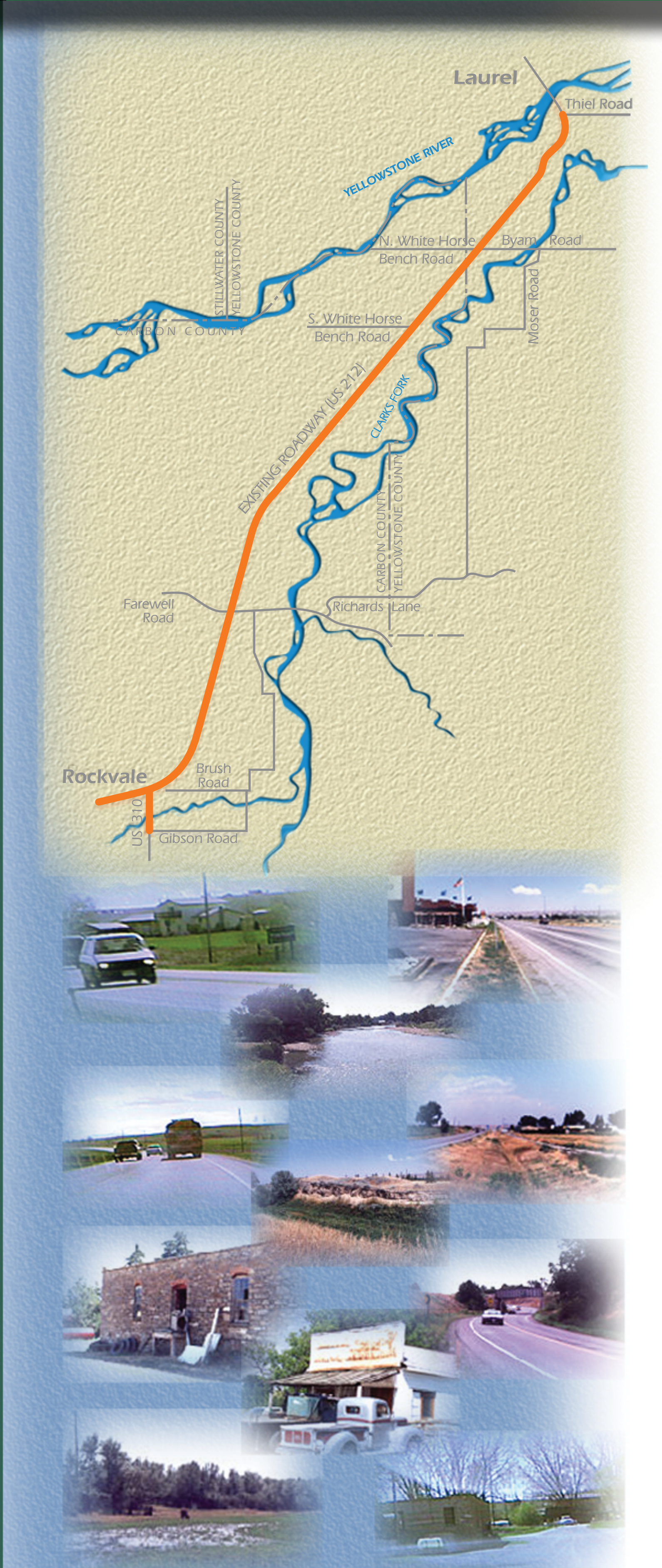
US 212 Reconstruction

ROCKVALE *to* LAUREL



Draft Environmental Impact Statement

Montana Department
of Transportation

NH 4-1(21)43
Control No. 4070

U.S. Department of Transportation
Federal Highway Administration

October 2007

Draft Environmental Impact Statement for
NH 4-1(21)43
ROCKVALE-LAUREL (PPMS-OPX2 Control #4070) in
Yellowstone and Carbon Counties, Montana

This document is prepared in conformance with the Montana Environmental Policy Act (MEPA) requirements and contains the information required for an environmental impact statement under the provisions of ARM 18.2.237(2) and 18.2.243. It is also prepared in conformance with the National Environmental Policy Act (NEPA) requirements for an environmental impact statement under 23 CFR 771.123 and Section 4(f) of the U.S. Department of Transportation Act under 23 CFR 771.135. Submitted pursuant to 42 USC 4332(2)(c), Sections 75-1-201 & 2-3-104 MCA, and Executive Orders 11990, 11988, 12898, and 13112 by the

U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION,

MONTANA DEPARTMENT OF TRANSPORTATION,

and the following Cooperating Agencies

U.S. Fish and Wildlife Service
U.S. Natural Resources Conservation Service
U.S. Army Corps of Engineers
Montana Fish, Wildlife and Parks

10/29/07
Date of Approval

Montana Department of Transportation

10/31/2007
Date of Approval

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ABSTRACT

This proposed highway reconstruction project is for a 17.4-kilometer (10.8-mile) section of U.S. Highway 212/310 between Carbon and Yellowstone counties in south-central Montana, along with a short section of U.S. Highway 310 southwest of Rockvale. The alternative preferred by MDT and the Federal Highway Administration would involve "shifting" the alignment west-northwesterly with grading, paving, new structures, guardrails, and fencing, and would include access to both the present route and adjacent or nearby properties. That Preferred Alternative, designated Alternative 5B—Combined West Bench herein, would be a four-lane divided facility between the Rockvale area and the existing four-lane highway southerly of Laurel. Principal environmental impacts would be to land use (primarily in farmlands), traffic noise, water resources (an intermittent stream and irrigation ditch crossings), and wetlands. Some residential relocations are expected.

Comments on this draft environmental impact statement are due by December 26, 2007, and should be sent to Dan Smith, P.E., at the address shown above.

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PART I: DRAFT ENVIRONMENTAL IMPACT STATEMENT

SUMMARY

An environmental impact statement (EIS) helps the lead agencies (the Montana Department of Transportation [MDT] and the U.S. Department of Transportation, Federal Highway Administration [FHWA]) make informed choices between reasonable alternatives. This summary of the *US 212 Reconstruction Rockvale to Laurel Draft Environmental Impact Statement* (Draft EIS) highlights key information about the project purpose, the alternatives being considered, and how the alternatives compare to each other. This information is discussed in more detail in other chapters of this Draft EIS. As the lead agencies consider these choices, it is important that you, the public, see the same information and understand how the project could affect your community and the environment.

Project Route

This Draft EIS has been prepared for a 17.4-kilometer (km) (10.8 mile [mi]) portion of U.S. Highway 212/U.S. Highway 310 (US 212/310) in south-central Montana, along with a short portion of U.S. Highway 310 (US 310) southwest of Rockvale. For simplicity, the route is referred to as US 212 in the remainder of the document.

Proposed Alternatives

This Draft EIS reviews proposed options (including a No Build Alternative) for US 212 from the City of Laurel south to Rockvale between reference post (RP) 42.1 and approximately RP 52.9. Note that the original project limits set by MDT began at RP 42.6. However, two of the project alternatives developed (Alternative 1—Far West Bench and Alternative 3A—Near Existing Alignment) would extend the southwest project limit to RP 42.1. The project area is located in Carbon and Yellowstone counties.

This Draft EIS identifies a Preferred Alternative (designated as Alternative 5B—Combined West Bench herein) to reconstruct US 212. The Preferred Alternative includes a four-lane divided facility on a new alignment generally northwest from its present route. A build alternative would be constructed as appropriate in accordance with current MDT Standards.

Environmental Consequences and Mitigation

The probable social, economic, and environmental impacts that may result from construction and implementation of the proposed project are identified in this document. This Draft EIS has been prepared in accordance with the National Environmental Policy Act (NEPA) as implemented for federally funded projects (42 U.S. Code [USC] 4321 et seq.) and the Montana Environmental Policy Act (MEPA) (Montana Code Annotated [MCA] 75-1-101 et seq.). Measures proposed to mitigate adverse impacts are also described.

Topics

This summary highlights the major findings of this Draft EIS and addresses the following topics:

- Purpose and Need
- Project Description
- Project History
- Alternatives
- Affected Environment
- Environmental Consequences
- Mitigation
- Cumulative Impacts
- Permits and Other Governmental Actions
- Major Unresolved Issues

Purpose and Need

The Purpose and Need section provides information about the following topics:

- Purpose
- Critical Needs
- Key Concerns

Purpose

The purpose of the proposed project is to accommodate growing traffic volumes; resolve safety conflicts between the highway's dual purpose of transporting regional tourist and truck traffic and transporting local traffic; and provide access for local roadways and land use. Specifically, this project has been proposed to:

- Improve safety for local and regional traffic needs
- Accommodate capacity needs for local and regional travelers over the next 20 years and beyond using prudent planning principles
- Accommodate the variety of transportation needs along US 212, including local circulation and access for residents with existing access needs
- Support mobility of goods and people connecting Interstate 90 (I-90) with the rural communities of Silesia, Rockvale, Red Lodge, and Bridger, and with destinations in Wyoming

Critical Needs

The following critical needs for improving the US 212 transportation corridor between Rockvale and Laurel have been identified:

- There is conflict between local and regional traffic needs, including slow versus faster travel desires, sightseeing versus destination-oriented driving, and frequent stops versus through connectivity with other portions of the National Highway System (NHS).
- Accidents are most frequently located at points of access (such as driveways and local roadways connecting to US 212) and stationary objects.
- Accidents involving truck traffic are more than double the state average for similar roadways in Montana.
- The existing two-lane US 212 is undersized for carrying anticipated traffic volumes in the next 20 years and beyond.
- The distance for storing vehicles stopped between US 212 and railroad crossings (vehicle storage distance) is inadequate.
- Residential development and other physical features constrain the ability to widen the existing right-of-way within the project area.

Key Concerns

These US 212 roadway needs have been translated into four key concerns: safety, capacity, mobility, and access management. These concerns, which are incorporated into the project purpose, are summarized below.

- **Safety.** While both the number and severity of accidents for vehicles of all types are less than the statewide averages, the truck-involved accident rate is more than 2.7 times the statewide average. The northern portion of the existing highway experienced a greater number and frequency of accidents.
- **Capacity.** It is estimated that transportation demand will increase by approximately 125 percent between 2000 and 2025. For the year 2025, traffic volumes have been forecasted as 11,590 vehicles per day (vpd) at the junction of US 212 and US 310 at Rockvale and 13,250 vpd at the county line. A design hourly volume of 1,590 vehicles per hour (vph) has been projected for the year 2025.

Traffic operations are characterized by level of service (LOS). The Transportation Research Board's labels of A through F are used, with LOS A as most optimal. In other words, LOS A provides the highest level of service.

Delays from speed reductions are commonly due to a number of factors. These include types and volume of traffic, turning movement restrictions, and/or passing sight distances.

A two-lane typical section configuration with intermittent passing lanes was used to analyze the capacity of, and potential delays on, the existing roadway and a new alignment. The analyses showed LOS C in 2005 for the existing and new alignments. By 2025, the northern portion of the existing roadway would be expected to drop to LOS D and the southern portion of the existing roadway and the new alignment would be expected to remain at LOS C, with higher delays due to increased traffic volumes.

The LOS C and LOS D ratings do not meet MDT capacity standards for this roadway type. A principal objective of this proposed project is to enhance and/or improve these conditions to the optimum of LOS B.

- **Mobility.** Mobility is the ability to maintain a normal operating speed and maneuver to one's destination without interference from other traffic. US 212 is only two lanes with narrow shoulders, poor vertical and horizontal alignments, and a narrow railroad underpass. In addition, 47 percent of this project area is considered a no-passing zone. For two-lane roadways, vehicles traveling in a single direction are often inhibited by the lack of passing opportunities and the volume of opposing traffic. Little traffic is required to limit traffic mobility on two-lane roadways such as US 212.

- **Access Management/Access Control.** Access management is the systematic control of the location, spacing, design, and operation of driveways, median openings, interchanges, and street connections to a roadway. The purpose of access management is to improve safety, preserve function and mobility, and handle existing and future accesses in a consistent manner.

  Access management would be an integral part of the design and operation of the build alternatives. During the design phase of the proposed project, access management guidelines and an access management plan would be developed after consulting with property owners. At the end of the design phase, but before right-of-way acquisition, a resolution designating the highway as a controlled-access highway would be submitted to the Montana Transportation Commission for approval. Accesses would then be managed in accordance with the access control resolution and the access management guidelines and plan.

There are 103 access points, most of which are residential in nature. Nineteen access points cross the railroad tracks, three of which are multiple-use roads. MDT has determined a strong correlation between accidents and the concentrated areas of access points. Highways with positive control of access to and from abutting properties are recognized as operationally superior and safer than uncontrolled access facilities.

Project Description

The Project Description section provides information about the following topics:

- Project Location
- Alternatives Reviewed and Preferred Alternative

Project Location

On a regional scale, US 212 is the main northeasterly highway for the Red Lodge and Yellowstone Park recreational areas. It is a critical link in the National Highway System.

The project is located in Carbon and Yellowstone counties in south-central Montana southwest of Billings. US 212's presently traveled way (PTW), which is located in the Clarks Fork Yellowstone River valley, lies between the Yellowstone River and the Clarks Fork

Yellowstone River. The topography is generally flat in the valley bottom, with steep bluffs to the west rising to a plateau that extends to bluffs overlooking the Yellowstone River valley. The topography rises more gently to the east from the valley bottom of the Clarks Fork Yellowstone River.

Alternatives Reviewed and Preferred Alternative

Several alternatives, including a No Build Alternative, were reviewed. These alternatives begin near US 310's junction with US 212, progress northeast, and end at the connection to the existing four-lane highway at approximately RP 52.9, which is south of the bridge crossing the Yellowstone River. The alternative that FHWA and MDT prefer (Alternative 5B—Combined West Bench, the Preferred Alternative) would be to reconstruct US 212's current two-lane route to a four-lane divided highway. The Preferred Alternative reconstruction would be on a new alignment northwest of and partly parallel to the former PTW. The junction with US 310 in Rockvale would also be reconstructed to connect with US 212's new roadway. The proposed facility would be designed and managed with the intent to provide access to public roads and to provide reasonable and appropriate access to abutting property.

Project History

The Project History section provides information about the following topics:

- Project Initiation
- Public Input

Project Initiation

This project was initially proposed by MDT and approved by the Montana Transportation Commission in 1998. The proposed project was included in Amendment 1 of the 1999 Statewide Transportation Improvement Program, which indicated its construction would occur after Fiscal Year 2007. The Notice of Intent to prepare an Environmental Impact Statement (EIS) was published in the *Federal Register* (FR) on July 14, 2000 (65 FR 136).

Public Input

A number of public scoping and information meetings were held to discuss this project. The initial public scoping meeting was held in Laurel, Montana, on August 30, 2000, to identify corridors within which possible alternative alignments could be located. Follow-up public scoping meetings were held on November 13, 2000, and December 12, 2001, also in Laurel. Specific potential alternative alignments were presented to the public at the November 13, 2000, meeting. Public input was used to recommend alternative alignment modifications. The final alternatives to be evaluated in the EIS were presented to the public at the December 12, 2001, meeting. Subsequent evaluation and public input identified other issues. In addition, new data became available. To address these issues and incorporate the new data, several modifications of the alternative alignments were prepared and evaluated.

Alternatives

The Alternatives section provides information about the following topics:

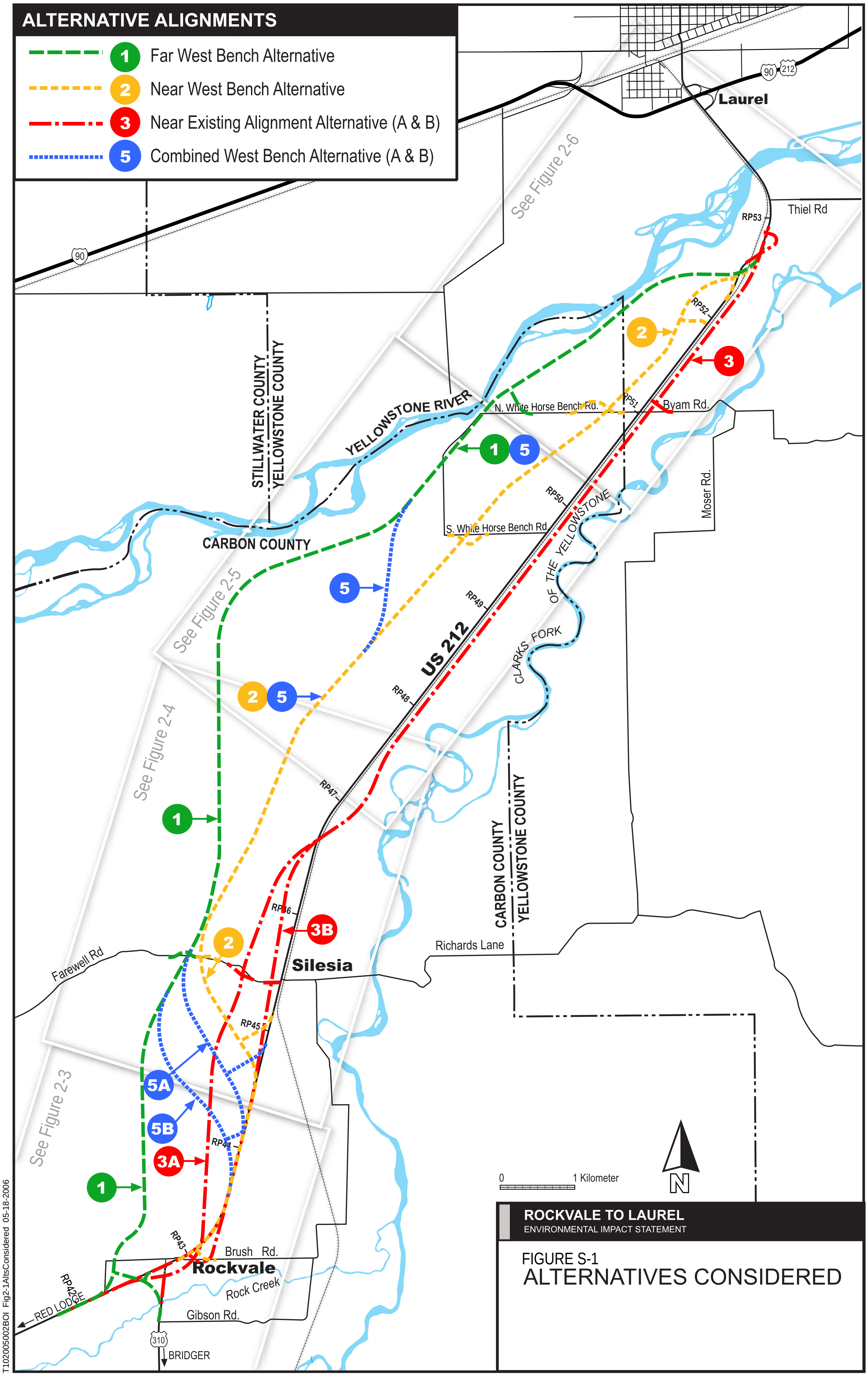
- Development of Alternatives
- Analyses Conducted
- Future Status of the Presently Traveled Way
- Engineering and Other Aspects of the Alternatives Considered
- No Build Alternative
- Build Alternatives
- Alternatives not Carried Forward
- Typical Sections and Right-of-Way

Development of Alternatives

The alternatives presented in this Draft EIS are the result of a vigorous public involvement process involving members of the general public, public interest groups, and state and federal regulatory and management agencies. A variety of alternative alignments were explored before developing the six build alternatives presented in Chapters 2 through 4 of this Draft EIS. Based on the preliminary engineering analysis and the environmental evaluation presented in this Draft EIS, as well as on public comments, Alternative 5B—Combined West Bench has been identified as the Preferred Alternative. A No Build Alternative is included as a basis for comparing impacts related to the build alternatives. Other alternatives with either fewer lanes (such as two or three lanes) or different four-lane configurations were not reviewed in detail (see *Alternatives Not Carried Forward*). The alternatives considered in this Draft EIS, including the No Build Alternative ("Existing Roadway"), are shown on Figure S-1. The dimensions used in this document are based on concept design and are subject to change as the design progresses.

Analyses Conducted

Several detailed analyses were conducted while developing the typical section configuration for the build alternatives. Analyses of the traffic operations determined that the operations issues of capacity, mobility, safety, and access management cannot be improved within the existing highway network. A four-lane facility is necessary to achieve acceptable traffic operations. Research performed by the FHWA (1999) supports this conclusion. This research found that converting two-lane rural highways to median-divided, four-lane facilities reduced accident rates by 40 to 60 percent compared to the undivided two-lane highways. The benefits of converting two-lane rural highways to median-divided, four-lane facilities are sensitive to traffic volume. Also, on divided highways, it has been shown that non-traversable medians yield additional safety benefits. In summary, a four-lane, median-divided, access-controlled highway is recommended to provide the highest level of safety and operational success (capacity, mobility, and access management) for US 212.



ROCKVALE TO LAUREL
ENVIRONMENTAL IMPACT STATEMENT

FIGURE S-1
ALTERNATIVES CONSIDERED

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Future Status of the Presently Traveled Way

Most of the PTW, excluding the existing railroad underpass (which would be eliminated), would remain, maintaining local access. Each build alternative would provide new access connections on a new alignment.

Engineering and Other Aspects of the Alternatives Considered

Table S-1 summarizes information about engineering and other aspects of the alternatives considered.

No Build Alternative

The No Build Alternative is the current alignment and two-lane configuration of the PTW. Physical, operational, or safety improvements on the current alignment would either not occur or be very limited. However, the PTW would still be maintained. The No Build Alternative was used as a basis for comparing impacts related to this proposed project's build alternatives. The No Build Alternative ("US 212") is shown on Figure S-1.

Build Alternatives

The alignments and some access issues related to the six build alternatives are discussed in the following sections. Figure S-1 shows the alignments for these alternatives, which include:

- Alternative 1—Far West Bench
- Alternative 2—Near West Bench
- Alternative 3–Near Existing Alignment (two variations)
  - Alternative 3A—Deviates north at RP 43.1 then parallels existing alignment
  - Alternative 3B— Deviates north at RP 44.4 then parallels PTW (closest to existing alignment)
- Alternative 5—Combined West Bench (two variations)
  - Alternative 5A—Departs US 212 at RP 44.1
  - Alternative 5B (Preferred) —Departs US 212 at RP 43.7

Alternative 4—East Bench was dropped from detailed analysis (see *Alternatives Not Carried Forward*).

TABLE S-1
Summary Information about Engineering and Other Aspects of the Alternatives Considered[a]

Comparison Area	No Build Alternative	Alternative 1—Far West Bench	Alternative 2—Near West Bench	Alternative 3—Near Existing Alignment		Alternative 5—Combination West Bench	
				Alternative 3A	Alternative 3B	Alternative 5A	Alternative 5B (Preferred)
Length of Roadway	16.4 km (10.2 mi)	19.2 km (11.9 mi)	17.7 km (11.0 mi)	17.6 km (10.9 mi)	16.9 km (10.5 mi)	18.2 km (11.3 mi)	18.4 km (11.4 mi)
Relationship to the PTW							
Where it departs from the PTW	No change	RP 42.6	RP 44.5	RP 43.1	RP 44.4	RP 44.1	RP 43.7
Where it rejoins the PTW	No change	RP 52.7	RP 52.4	RP 52.7	RP 46.6	RP 52.7	RP 52.7
Traffic							
Level of Service (LOS)	E	A	A	A	A	A	A
Local traffic	No change	Would carry the least local traffic	Moderate local traffic interaction	Would carry the most local traffic	Would carry the most local traffic	Moderate local traffic interaction	Moderate local traffic interaction
Local Circulation & Access							
General	No change	<--------------------------------------- No general advantage between alternatives --->					
Access requirements	No change	Generally, no new access to properties from the PTW required	Generally, no new access to properties from the PTW required	The PTW would become a frontage road providing access to properties	The PTW would become a frontage road providing access to properties	Generally, no new access to properties from the PTW required	Generally, no new access to properties from the PTW required
Access to Rockvale	No change	Poor	Good	Fair	Good	Good	Good
Access Points (approximate)	103	25	34	38	39	36	35
Safety[b]							
Exposure to conflict points (% of existing)	No change	40%	53%	66%	65%	55%	53%
Exposure to existing US 212 conditions	No change	19%	14%	9%	8%	17%	18%
Railroad crossings[c]	No change	No Change	No Change	Decreased Safety	Decreased Safety	No Change	No Change

TABLE S-1
Summary Information about Engineering and Other Aspects of the Alternatives Considered[a]

Comparison Area	No Build Alternative	Alternative 1—Far West Bench	Alternative 2—Near West Bench	Alternative 3—Near Existing Alignment: Alternative 3A	Alternative 3—Near Existing Alignment: Alternative 3B	Alternative 5—Combination West Bench: Alternative 5A	Alternative 5—Combination West Bench: Alternative 5B (Preferred)
Typical Section	No change to existing roadway that is 19.2-m (64-ft) wide	For most of the highway corridor, the 11-meter Median Typical Section (100-ft Section) is recommended. In built up areas such as Rockvale and Laurel, the 5-meter Median Typical Section (80-ft Section) is recommended					
Geometry[d]							
Sharp curves (7-8% superelevation range)	2 curves	5 curves	4 curves	3 curves	1 curve	2 curves	2 curves
Vertical curves at 100 km/h (60 mph) design speed	0 curves	1 curve	1 curve	0 curves	0 curves	1 curve	1 curve
Grades over 3% (100 km/h [60 mph] design speed)	2 grades	8 grades	3 grades	0 grades	0 grades	6 grades	7 grades
Long steep grades (16 km/h [10 mph] speed reduction)	0 grades	3 grades	0 grades	0 grades	0 grades	1 grade	3 grades
Grade separations	No change	4	2	4	4	4	4
Geotechnical Considerations[e]							
Earthwork required	No change	1st (Most)	3rd (~84% of Alt. 1)	5th (45% of Alt. 1)	5th (45% of Alt. 1)	4th (~75% of Alt. 1)	2nd (~95% of Alt. 1)
Length of concerns	No change	33.2 km (20.6 mi)	11.6 km (7.2 mi)	7.5 km (4.7 mi)	7.5 km (4.7 mi)	18.1 km (11.2 mi)	18.1 km (11.2 mi)
Intersections							
With roads	No change	5	6	4	3	6	6
With railroad crossing	No change	0	0	4	4	0	0
Crossing Requirements							
Overpass over railroad tracks (bridge)	No change	2	2	2	2	2	2
Overpass over PTW (bridge)	No change	2	0	2	2	2	2
Bridge over water body	No change	1 (Rock Creek)	0	0	0	0	0
Culvert over water body	No change	4	7	7	4	6	6
Railroad and Utility Conflicts	None	1 railroad crossing	1 railroad crossing, gas line	1 railroad crossing, substation displaced	1 railroad crossing, substation displaced	1 railroad crossing, gas line	1 railroad crossing, gas line

TABLE S-1
Summary Information about Engineering and Other Aspects of the Alternatives Considered[a]

Comparison Area	No Build Alternative	Alternative 1—Far West Bench	Alternative 2—Near West Bench	Alternative 3—Near Existing Alignment: Alternative 3A	Alternative 3—Near Existing Alignment: Alternative 3B	Alternative 5—Combination West Bench: Alternative 5A	Alternative 5—Combination West Bench: Alternative 5B (Preferred)
Public Comment[f]							
Comments FOR / AGAINST (%age)	Few comments	73% / 8%	28% / 58%	23% / 56%	23% / 56%	See Note f	
Construction Cost Estimate (in 2012 dollars)	0	$53.9 million	$45.6 million	$49.9 million (includes $1 million to relocate an electricity substation)	$46.0 million (includes $1 million to relocate an electricity substation)	$51.8 million	$54.0 million

[a]These values are based on preliminary (approximately 30%) design and may change as the design process continues.

[b]Less exposure to approaches (conflict points) and railroad crossings is considered more desirable, as more exposure indicates a higher potential for accidents.

[c]Pertains to both the existing US 212 and the alternative.

[d]Sharp horizontal curves, lower design speed vertical curves, steep grades, and long steep grades that reduce truck speed significantly are less desirable.

[e]Greater length equates to more geotechnical concerns on the specific alternative.

[f]Comments not gathered from general public. Affected landowners on south end of project prefer Alternative 5B over Alternative 5A by a ratio of 5 to 1.

Alternative 1—Far West Bench

The Alternative 1 alignment would:

- Depart the PTW nearly 1.2 km (0.75 mi) west-southwesterly from Rockvale.
- Curve onto a northerly bearing and pass through irrigated cropland westerly of Rockvale, ascending the hills northerly from there.
- Continue northerly over rolling rangelands.
- Intersect the Farewell Road westerly of Silesia.
- Cross Farewell Creek upstream from a small reservoir.
- Proceed northerly through rangelands and wheat fields to the bluffs along the Yellowstone Valley's southerly side.
- Turn northeasterly to follow those bluffs through more wheat fields and irrigated croplands onto the White Horse Bench.
- Intersect White Horse Bench Road north of the old White Horse School.
- Continue northeasterly through irrigated croplands on the Yellowstone Valley's southerly bluffs to within approximately 0.5 km (0.3 mi) northerly of the Krug (Gravel) Pit.
- Turn easterly, crossing both the PTW near RP 52.4 and the railroad tracks.
- Turn northerly through more croplands, joining the PTW at approximately RP 52.7.

Drivers currently access the properties affected by Alternatives 1, 2, 5A, and 5B (preferred) from public roads. Those public roads would have new intersection crossings with the proposed alignments of US 212, and new access to individual properties from US 212 would generally not be required. Access to most local properties could be made from the PTW, which would remain in place. Each build alternative would require approximately five field access points. These new access points would be in addition to crossing intersections at existing public roads.

Alternative 2—Near West Bench

The Alternative 2 alignment would:

- Follow the PTW from Rockvale northerly to approximately RP 44.5.
- Leave the PTW, turning northwesterly through pastureland.
- Intersect Farewell Road approximately 1.1 km (0.7 mi) westerly of Silesia.
- Cross Farewell Creek upstream from a small reservoir.
- Proceed northeasterly through rangelands and wheat fields.

- Intersect the South White Horse Bench Road westerly of the PTW.
- Continue northeasterly through irrigated croplands.
- Intersect the North White Horse Bench Road westerly of the PTW.
- Remain heading northeasterly into Yellowstone County.
- Cross the Mason Canal southerly of the Krug (Gravel) Pit.
- Turn northerly to generally parallel the Mason Canal's southeasterly (right) bank through irrigated croplands.
- Turn east-northeasterly onto the Alternative 1 alignment, crossing the PTW near RP 52.4.
- Remain on the same proposed alignment as Alternative 1.

Access issues would be the same as those described for Alternative 1.

Alternative 3—Near Existing Alignment

Alternative 3 has two potential alignments, Alternatives 3A and 3B, that are discussed in the following sections.

Alternative 3A—Near Existing Alignment. The Alternative 3A alignment would:

- Leave the PTW approximately 0.4 km (0.25 mi) southwesterly from its present junction with US 310.
- Proceed east-northeasterly through irrigated croplands, intersecting US 310 southerly of Rockvale near RP 42.7.
- Turn northerly to cross the PTW close to RP 43.1.
- Cross the Smith Ditch.
- Continue northerly through irrigated croplands and pasturelands between the Smith Ditch and the Free Silver Ditch.
- Bend slightly easterly and intersect Farewell Road west of Silesia.
- Return to a more northerly bearing, roughly paralleling the PTW just over 0.5 km (0.3 mi) easterly.
- Bend northeasterly to cross the White Horse Canal.
- Traverse the PTW (near RP 46.6), the railroad tracks, and the Mason Canal.
- Turn northerly, paralleling the southeasterly right-of-way of the railroad.
- Match the proposed alignments of both Alternatives 1 and 2 soon after crossing the railroad tracks.
- Join the PTW at approximately RP 52.7.

The north 9.5 km (5.9 mi) of Alternatives 3A and 3B would be located northeasterly and southeasterly of, and parallel to, the railroad tracks. This would effectively limit access from the west to public roads that would continue to cross the railroad tracks. The PTW would become a frontage road serving other access points from the west.

An examination of the number and location of existing access points east of the railroad tracks suggests that it would be reasonable to provide access to the new US 212 alignment at most existing access locations. Only two existing locations have spacing of less than 0.4 km (0.25 mi), and these could be eliminated in final planning. The number of access points from the east would be approximately four per mile. This would be acceptable given that the access points generally serve single homesteads. It would be expected, however, that future development to greater numbers of homes or businesses would prompt the need for the development of local roadways that would ultimately reduce the number of access points.

Both Alternatives 3A and 3B would need existing access consolidated from the beginning of their alignment to southwesterly of RP 46.5 on the PTW. Approximately eight access locations are present on each side of the PTW in the southwesterly 3.2 km (2.0 mi) on the proposed project's portion of US 212. Therefore, it would be necessary to realign and/or eliminate several access connections and to determine if a frontage road would be desirable.

Alternative 3B—Near Existing Alignment. The Alternative 3B alignment would:

- Remain on the PTW to approximately RP 44.4.
- Diverge from the PTW and run northerly through pasturelands.
- Cross the Farewell Road immediately west of Silesia.
- Continue through pasturelands and irrigated croplands until it joins Alternative 3A, which would occur southwesterly of where Alternative 3A crosses the PTW at approximately RP 46.6.
- Use Alternative 3A's alignment for the remainder of Alternative 3B's route.

Access issues would be the same as those discussed for Alternative 3A.

Alternative 5—Combined West Bench

Alternative 5 has two potential alignments, Alternatives 5A and 5B (preferred), that are discussed in the following sections.

Alternative 5A—Combined West Bench. The Alternative 5A alignment would:

- Use the same alignment as Alternative 3B on the PTW to approximately RP 44.1.
- Turn northwesterly, crossing irrigated croplands and pasturelands.
- Join Alternative 1 southerly of where Alternative 1 intersects Farewell Road.

- Continue north-northeasterly on Alternative 2’s proposed route.
- Turn northerly in the S.E. 1/4 of Section 1 in Township 3 South, Range 23 East.
- Rejoin Alternative 1 in the S.W. 1/4 of Section 31 in Township 2 South, Range 24 East, Montana Principal Meridian, which would be approximately 0.45 km (0.28 mi) northwesterly from the old White Horse School site.
- Continue on Alternative 1’s alignment to the proposed project’s northeasterly end near RP 52.7 on the PTW.

Access issues would be the same as those discussed for Alternative 1. Alternative 5A would require reconstructing intersections with both US 310 and Brush Road at Rockvale. A frontage road would be needed between Rockvale (from the Brush Road intersection) and where this alternative would turn northwesterly from the PTW.

Alternative 5B—Combined West Bench (Preferred). The Alternative 5B (preferred) alignment would:

- Use the same alignment as Alternative 3B on the PTW to approximately RP 43.7.
- Leave the PTW and turn northwesterly through irrigated farmland.
- Turn northeasterly and briefly join Alternative 1 before it intersects Farewell Road west of Silesia.
- From its intersection with Farewell Road, follow Alternative 5A.

Access issues would be the same as those discussed for Alternative 5A.

Alternatives Not Carried Forward

In the development of build alternatives, several design aspects were analyzed to determine their appropriateness related to the proposed project’s objectives. The following alternatives were either initially developed and presented to the public or reviewed but subsequently dropped from further consideration on this proposed project:

- **Typical Sections with Two Lanes and Three Lanes (Two-Lane with Passing Lanes).** These typical sections were dismissed because they do not meet the safety needs for local and regional traffic nor accommodate the projected capacity needs for local and regional travelers over the next 20 years, which are both objectives of the proposed project’s Purpose and Need.
- **Typical Sections Without Medians.** The PTW requires a median to satisfy safety needs. Therefore, typical sections without medians were dismissed.
- **Transportation System Management and Transportation Demand Management (TSM/TDM) Alternative.** This alternative for reducing demand through methods of transport (mobility) and/or physical changes (system) neither satisfies the safety needs for

local and regional traffic nor accommodates projected capacity needs. The TSM/TDM Alternative was removed from further consideration.

- **Alternative 4—East Bench.** This alternative proposed a four-lane divided route running east-northeasterly from Alternative 3A's projected junction with US 310 southerly of Rockvale. It would have paralleled the existing alignment southeasterly of and above the Clarks Fork Yellowstone River on the opposite bank. The alignment would have crossed the Clarks Fork Yellowstone River twice. This alternative lacked agency and public support. Riverine and wetland environments from the river crossings would have been affected by this alternative without providing better transportation service than the other build alternatives. Alternative 4 was considered; however, it was not carried forward for complete analysis.

Typical Sections and Right-of-Way

The 11-meter Median Typical Section (100-ft Section), which is a four-lane facility with a depressed median, is recommended for most of the highway corridor. Each lane would be 3.6-m (12-ft) wide. There would also be a preference for 2.4-m (8-ft)-wide outside shoulders, and an 11-m (36-ft)-wide depressed median. The 5-meter Median Typical Section (80-ft Section) is recommended in built up areas such as Rockvale and Laurel. The typical right-of-way for both sections (impact area or footprint) would be approximately 80 m (260 ft) wide. The discussion of build alternatives in this draft EIS is based on the preferred typical section (11-meter Median Typical Section).

Affected Environment

The existing social, economic, and environmental conditions within the study area are described in *Chapter 3, Affected Environment*. The following resource areas are discussed; Land Use; Farmlands; Social Conditions; Transportation Right-of-Way and Relocations; Economic Conditions; Environmental Justice; Pedestrian and Bicycle Considerations; Air Quality; Noise; Water Flow and Quality; Wetlands; Water Bodies and Aquatic Resources; Vegetation; Wildlife Resources; Threatened and Endangered Species and State Species of Concern; Floodplains; Cultural Resources; Hazardous Materials; Visual Resources; Energy Consumption; and Geology and Soils.

Environmental Consequences

Chapter 4, Environmental Consequences, discusses expected environmental effects, both positive and adverse, and presents mitigation measures to compensate for potential adverse effects. Table S-3 (following the *Major Unresolved Issues* section of this *Summary*) summarizes and compares the environmental consequences of the No Build Alternative and the build alternatives. Some notable items from that summary include:

- **Farmland.** Construction of a build alternative would convert NRCS-classified suitable farmlands (that is, Prime if Irrigated Farmland and Farmland of Statewide Importance) to

non-agricultural uses. Using preliminary design footprints of the roadway and related facilities, impacts range from approximately 75.80 hectares (ha) (187.30 acres [ac]) of NRCS-classified suitable farmlands with Alternative 3A to approximately 108.17 ha (267.28 ac) with Alternative 2.

- **Relocations.** The build alternatives would likely require residential relocations, ranging from 10 houses with Alternatives 3A and 3B to 2 houses with Alternatives 1, 2, and 5A. Additionally, with Alternative 3A, two businesses would likely be relocated, and with Alternative 3B one business would likely be relocated. With the build alternatives, buildings on between one and three farms would likely need to be relocated. With Alternative 5B (preferred), four residences would likely be relocated, one of which is a farm house.
- **Noise.** The build alternatives would increase transportation-related noise levels. Impacts by the design year (2025) are predicted to range from 3 noise-sensitive receptors representing 2 residences (affected with Alternative 3B) to 11 noise-sensitive receptors representing 17 residences (affected with Alternative 2). Alternative 5B (preferred) would impact 3 noise-sensitive receptors representing 3 residences.
- **Wetlands.** Using preliminary design footprints of the roadway and related facilities, total wetland (jurisdictional and non-jurisdictional) impacts range from approximately 0.6 ha (1.5 ac) (Alternative 1) to 1.1 ha (2.5 ac) (Alternative 3A). The impacts on jurisdictional wetlands using preliminary design footprints of the roadway and related facilities range from approximately 0.5 ha (1.5 ac) (Alternative 1) to 1.0 ha (2.5 ac) (Alternative 3A). Alternative 5B (preferred) is predicted to impact approximately 0.6 ha (1.5 ac) of wetlands, of which 0.6 ha (1.5 ac) would be jurisdictional wetlands.
- **Irrigation Systems (Canals).** Alternative 1 would have the least effect on irrigation systems (canals), affecting the Free Silver Ditch, White Horse Canal, and Mason Canal. The other build alternatives would involve those three irrigation systems and an additional system (Smith Ditch).
- **Stream Crossings.** With Alternative 1, two streams would be crossed (one new crossing, one existing crossing). With the other build alternatives, one stream would be crossed (a new crossing).

Mitigation

General mitigation measures discussed in *Chapter 4, Environmental Consequences,* would compensate for direct, indirect, and cumulative impacts that might result from implementation of a build alternative. Table S-4, Summary of Operations-Related Mitigation Measures, and Table S-5, Summary of Construction-Related Mitigation Measures (at the end of this *Summary*) list the mitigation measures presented in *Chapter 4*, *Environmental Consequences*.

Cumulative Impacts

MDT has identified various transportation projects that have the potential for interaction with the Rockvale to Laurel project. These projects were considered in the cumulative impact assessment. Ongoing agricultural activities and rural development would also interact with the transportation projects. No other developments or planned developments that might affect or be affected by the proposed expansion project have been identified in the City of Laurel, Carbon County, or Yellowstone County.

The proposed MDT projects are summarized in Table S-2 and described in *Section 4.25, Cumulative Impacts.*

TABLE S-2
Proposed Montana Department of Transportation Projects near the Rockvale to Laurel Project Area

Project	Description	Location	Relationship to Project Area	Potential Start Date
Corridor Study–Red Lodge North	Reconstruct US 212	RP 70 to RP 90	Approximately 19.3 km (12 mi) from project area	2008
Red Lodge–Northwest	Reconstruct Montana State Highway 78	RP 0 to RP 5.1	About 53.1 km (33 mi) from project area	2010
Bridger-South	Rehabilitate a portion of US 310 located south of Bridger along Bridger Jack Creek, a tributary to the Clarks Fork Yellowstone River	RP 12.6 to RP 25.676	Within the Clarks Fork Yellowstone River watershed	2010
Wyoming Line-Belfry	Reconstruct MT 72 paralleling the Clarks Fork Yellowstone River between the Wyoming State Line and the Town of Belfry	RP 0 to RP 10.54	Within the Clarks Fork Yellowstone River watershed	2006
Belfry-North	Reconstruct MT 72 between Belfry and US 310 to the south	RP 10.54 to RP 21.42	Approximately 16.3 km (10.1 mi)	2008
Clarks Fork-Fromberg	Replace a three-span, single-lane bridge over the Clarks Fork Yellowstone River on Carbon County Local Route 307 (locally known as East River Street)	1 km (0.6 mi) east of Fromberg	Within the Clarks Fork Yellowstone River watershed	2007
8th Ave-Main to 9th-Laurel	Reconstruct 8th Avenue in the City of Laurel	In Laurel	In Laurel	2009
Laurel Northeast	Rehabilitation/engineered overlay project from Birch Avenue to Locust Avenue	In Laurel	In Laurel	2009
2002 Turn Lane – Laurel	Reconstruct and widen the roadway from the intersection of Alder Avenue to the intersection Milwaukee Road from the current two-lane section to a three-lane section	In Laurel	In Laurel	2009
Bridger-Fromberg	Rehabilitate surface on MT 72 from RP 26.2 to RP 33.80	RP 26.2 to RP 33.80	In proximity to Rock Creek	2010

Permits and Other Governmental Actions

Implementation of a build alternative might include, but not be limited to, one or more of the following federal actions:

- Issuance of a Section 404 of the Clean Water Act (CWA) Permit by the U.S. Army Corps of Engineers (COE) for proposed fill impacts to jurisdictional wetlands and Waters of the U.S. For further information, see the CWA Section 404(b)(1) analysis of the proposed project in *Appendix E*.
- Approval for floodplain encroachments from the Federal Emergency Management Agency (FEMA) administered by each county.
- Coordination with the U.S. Fish and Wildlife Service (FWS) concerning threatened and endangered species.

Implementation of a build alternative might include, but not be limited to, one or more of the following state actions:

- Compliance with the water quality provisions of MCA 75-5-308 for Section 318 authorizations and the stream protection provisions of MCA 87-5-501 through 509.
- An SPA 124 authorization from Montana Fish, Wildlife and Parks (MFWP).
- A Section 401 of the CWA certification from the Montana Department of Environmental Quality (MDEQ).
- A Section 402/Montana Pollutant Discharge Elimination System (MPDES) authorization from the MDEQ.
- Coordination with MFWP concerning state species of concern.

Major Unresolved Issues

No major unresolved issues were identified during development of this Draft EIS.

TABLE S-3
Summary of Impacts[1]

Resource Area[2]	No Build Alternative	Alternative 1—Far West Bench	Alternative 2—Near West Bench	Alternative 3—Near Existing Alignment: Alternative 3A	Alternative 3—Near Existing Alignment: Alternative 3B	Alternative 5—Combination West Bench: Alternative 5A	Alternative 5—Combination West Bench: Alternative 5B (Preferred)
1. LAND USE							
Consistency with Local Plans							
Carbon County	No	Partial	No	Yes	Yes	Partial	Yes
Yellowstone County	No	Yes	No	Yes	Yes	Yes	Yes
City of Laurel	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2. FARMLAND DISPLACEMENT							
Prime farmland if irrigated	None	54.00 ha (133.44 ac)	43.17 ha (106.68 ac)	41.79 ha (103.27 ac)	57.67 ha (142.50 ac)	54.48 ha (134.61 ac)	66.05 ha (163.22 ac)
Farmland of Statewide Importance	None	33.60 ha (83.03 ac)	64.99 ha (160.60 ac)	34.01 ha (84.03 ac)	34.76 ha (85.90 ac)	49.20 ha (121.57 ac)	34.00 ha (84.01 ac)
Irrigated agricultural habitat (including pasture/alfalfa)	None	28.00 ha (69.2 ac)	21.16 ha (52.28 ac)	46.83 ha (115.72 ac)	29.20 ha (72.16 ac)	38.36 ha (94.78 ac)	35.12 ha (86.78 ac)
Dryland agricultural habitat (including pasture)	None	61.53 ha (152.05 ac)	44.40 ha (109.72 ac)	0 ha	0 ha	39.21 ha (96.90 ac)	45.57 ha (112.60 ac)
3. SOCIAL CONDITIONS							
Transportation Services							
Safety	Worsen	Improve	Improve	Improve	Improve	Improve	Improve
Level of service (LOS)	LOS E	LOS B	LOS B	LOS B	LOS B	LOS B	LOS B
Access	No change	More restricted	More restricted	More restricted	More restricted	More restricted	More restricted
4. TRANSPORTATION RIGHT-OF-WAY AND RELOCATIONS							
Number of houses impacted	No change	2	2	10	10	2	4[4]
Number of farmsteads	No change	1	1	2	3	1	1
Number of businesses impacted	No change	0	0	2	1	0	0
5. ECONOMIC CONDITIONS							
Loss in property tax ($/yr)	No change	$2,300	$2,300	$10,160	$10,700	$8,867	$10,793
Number of local businesses with a potential decline in patronage	No change	4	1	4	1	1	1

TABLE S-3
Summary of Impacts[1]

Resource Area[2]	No Build Alternative	Alternative 1—Far West Bench	Alternative 2—Near West Bench	Alternative 3—Near Existing Alignment		Alternative 5—Combination West Bench	
				Alternative 3A	Alternative 3B	Alternative 5A	Alternative 5B (Preferred)
6. ENVIRONMENTAL JUSTICE	No change	No change	No change	No change	No change	No change	No change
7. PEDESTRIAN AND BICYCLE CONSIDERATIONS	Worse over time	Improve	Improve	Improve	Improve	Improve	Improve
8. AIR QUALITY	Worse over time	Minor changes	Minor changes	Minor changes	Minor changes	Minor changes	Minor changes
9. NOISE							
Number of impacted noise receptors/residences by 2025	11/27	5/5	11/17	5/4	3/2	4/4	3/3
10. WATER FLOW AND QUALITY							
Number of domestic wells displaced	None	3	3	14	12	5	5
Number of public water supplies displaced	None	None	None	None	None	None	None
11. WETLANDS							
Impacted Area (Total)	None	0.5 ha (1.5 ac)	0.9 ha (2.0 ac)	1.1 ha (2.5 ac)	0.9 ha (2.0 ac)	0.6 ha (1.5 ac)	0.6 ha (1.5 ac)
Expected Jurisdictional	None	0.5 ha (1.5 ac)	0.8 ha (2.0 ac)	1.0 ha (2.5 ac)	0.8 ha (2.0 ac)	0.6 ha (1.5 ac)	0.6 ha (1.5 ac)
Expected Non-jurisdictional	None	<0.1 ha (<0.5 ac)	<0.1 ha (<0.5 ac)	<0.1 ha (<0.5 ac)	<0.1 ha (<0.5 ac)	<0.1 ha (<0.5 ac)	<0.1 ha (<0.5 ac)
12. WATER BODIES AND AQUATIC RESOURCES							
Water Resources		Stream and irrigation system crossings would not impact flows and did not affect selection of the Preferred Alternative.					

TABLE S-3
Summary of Impacts[1]

Resource Area[2]	No Build Alternative	Alternative 1—Far West Bench	Alternative 2—Near West Bench	Alternative 3—Near Existing Alignment: Alternative 3A	Alternative 3—Near Existing Alignment: Alternative 3B	Alternative 5—Combination West Bench: Alternative 5A	Alternative 5—Combination West Bench: Alternative 5B (Preferred)
13. VEGETATION	Same as existing	Direct habitat loss noted for wetlands and for altered remnant native uplands.	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1
14. WILDLIFE							
Road/traffic effects	Continuation of general road impacts such as vehicle collisions and noise disturbance	May increase wildlife mortality due to increased total roadway length, more traffic lanes, higher speeds, and continued use of the PTW (see *Section 4.14.2.1, Human Presence and Vehicle Use of the New Road).*	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1
Habitat loss	No additional habitat loss	Direct habitat loss noted for wetlands and for altered remnant native uplands.	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1
Altered remnant native uplands	0 ha	35.4 ha (87.5 ac)	29.4 ha (72.6 ac)	0 ha	0 ha	17.2 ha (42.5 ac)	31.9 ha (78.8 ac)
Wildlife travel corridors	No change	Disruption of wildlife travel corridors in drainages	Same as Alternative 1	Minor disruption of identified wildlife travel corridors	Minor disruption of identified wildlife travel corridors	Disruption of wildlife travel corridors in drainages	Disruption of wildlife travel corridors in drainages
Indirect effects such as noise, disturbance, and habitat fragmentation	No change	Relatively high compared to the other build alternatives because it would pass through lands that have been least altered by human activity	Similar but less than with Alternative 1	Similar to Alternative 2	Similar to Alternative 2	Similar to Alternative 2	Similar to Alternative 2
15. THREATENED & ENDANGERED SPECIES AND STATE SPECIES OF CONCERN							
Wildlife	No effects	State species of concern or their habitat that might be affected by the build alternatives include the Baird's sparrow, barn owl, milk snake, the western hognose snake, the northern leopard frog, and the bald eagle	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1
Plants	No effects	Same as No Build Alternative	Same as No Build Alternative	Same as No Build Alternative	Same as No Build Alternative	Same as No Build Alternative	Same as No Build Alternative

TABLE S-3
Summary of Impacts[1]

Resource Area[2]	No Build Alternative	Alternative 1—Far West Bench	Alternative 2—Near West Bench	Alternative 3—Near Existing Alignment: Alternative 3A	Alternative 3—Near Existing Alignment: Alternative 3B	Alternative 5—Combination West Bench: Alternative 5A	Alternative 5—Combination West Bench: Alternative 5B (Preferred)
16. FLOODPLAINS							
Total Impacts	No change	3.5 ha (8.6 ac)	1.3 ha (3.2 ac)	12.4 ha (30.6 ac)	4.3 ha (10.6 ac)	1.3 ha (3.2 ac)	1.3 ha (3.2 ac)
Rock Creek	No change	2.4 ha (5.9 ac)	0.2 ha (0.5 ac)	8.3 ha (20.5 ac)	0.2 ha (0.5 ac)	0.2 ha (0.5 ac)	0.2 ha (0.5 ac)
Yellowstone River/Clarks Fork Yellowstone River	No change	1.1 ha (2.7 ac)	1.1 ha (2.7 ac)	4.1 ha (10.1 ac)	4.1 ha (10.1 ac)	1.1 ha (2.7 ac)	1.1 ha (2.7 ac)
17. CULTURAL RESOURCES							
Historic railroad tracks	No change	No 4(f) use	No 4(f) use	No 4(f) use	No 4(f) use	No 4(f) use	No 4(f) use
Historic Free Silver Canal	No change	No 4(f) use	No 4(f) use	No 4(f) use	No change	No 4(f) use	No 4(f) use
Historic house	No change	No change	No change	No change	No change	No change	No change
18. HAZARDOUS MATERIAL							
Displacement	No change	7 waste collection sites and 3 electric pole transformers	4 waste collection sites	Creosote-stained soil and electric substation	Creosote-stained soil and electric substation	7 waste collection sites and 2 electric pole transformers	7 waste collection sites and 2 electric pole transformers
19. VISUAL RESOURCES							
Alter character of landscape[3]	No Change	**3.29 (Moderate)**	**3.07 (Moderate)**	**2.67 (Moderate-Low)**	**2.69 (Moderate-Low)**	**3.14 (Moderate)**	**3.20 (Moderate)**
20. ENERGY CONSUMPTION							
		Impacts related to energy would be basically the same across the build alternatives and did not affect selection of the Preferred Alternative.					
21. GEOLOGY AND SOILS							
		Impacts related to geology and soils would be basically the same across the build alternatives and did not affect selection of the Preferred Alternative.					
22. CONSTRUCTION IMPACTS RELATED TO THE BUILD ALTERNATIVES		See Table S-5, Summary of Construction-Related Mitigation Measures					

Note: Acreage numbers are based on the 80-m (260-ft) planning footprint

[1] These values are based on conceptual design.

[2] The numbers used in this column correspond with the subsections in Chapter 4.

[3] Visual Quality Rating (FHWA [1988] Methodology): 7 = High; 5 = Moderate; 1 = Low

[4] One is abandoned, and one is occupied rent-free.

TABLE S-4

Summary of Operations-Related Mitigation Measures[1]

Resources Area or Activity[2]	Description of Impact	Alternative Causing Impact	Potential Mitigation Measure
1. Land Use	Access to US 212	All Build Alternatives	**Integrate local growth policies.** Where appropriate, local growth policies would be integrated into the strategies for managing access. Implementation of limited access control within the project corridor might result in relocating, combining, or eliminating some existing access points if alternate access points can be provided. However, access management would not be used to prohibit the development of private property.
3. Social Conditions	Access to US 212.	All Build Alternatives	**Manage access.** Strategies for managing access would be used to handle specific impacts related to accessing US 212.
4. Transportation Right-of-Way and Relocations	Acquisition of new rights-of-way.	All Build Alternatives	**Provide compensation.** Affected landowners would be entitled to receive fair market value for land or buildings acquired and damages to remaining land due to the effects of highway construction.
	Displacement of residences, businesses, and farms.	All Build Alternatives	**Follow appropriate procedures.** The proposed project would be developed in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Public Law 91-646 as amended, 42 USC 4601, et. seq.) and the Uniform Relocations Act Amendments of 1987 (Public Law 100-17).
10. Water Flow and Quality	Displacement of domestic wells.	All Build Alternatives	**Restore domestic water**. If domestic wells were displaced by the proposed project, domestic water would be restored to the affected properties. The manner in which this would be accomplished would be determined on a case-by-case basis.
	Impacts to groundwater flow.	All Build Alternatives	**Conduct studies to avoid impacts to the water table**. Subsurface excavation to a depth sufficient to impact groundwater is not anticipated with implementation of the proposed project. However, if a situation arises that would entail excavation to a depth that might intersect the water table, mitigation measures would be implemented to minimize the impact to groundwater flow, including groundwater flow that supports springs.
	Contaminants from stormwater and highway runoff.	All Build Alternatives	**Seed the project area**. To re-establish permanent vegetation, disturbed areas within MDT right-of-way or easements will be seeded with desirable plant species, as recommended by the MDT Botanist. Revegetation will be conducted in accordance with the most current version of MDT Standard Specifications. This action would be in accordance with MCA 7-22-2152 and 60-2-208, and MDT would develop revegetation guidelines that the contractor would have to follow. As appropriate, these specifications would include instructions for seeding methods, dates, mix components, and the types and amounts of mulch and fertilizer.

TABLE S-4

Summary of Operations-Related Mitigation Measures[1]

Resources Area or Activity[2]	Description of Impact	Alternative Causing Impact	Potential Mitigation Measure
		All Build Alternatives	**Manage highway runoff contaminants**. Four management measures have been identified as effective means for removing contaminants such as salt and deicing agents from highway runoff. These measures are vegetative controls, wet detention basins, infiltration systems, and wetlands (TRB, 2000). Of these measures, the best mitigation tool for attenuating pollutant loading from highway runoff along the US 212 corridor would be vegetative control. To re-establish permanent vegetation, disturbed areas within MDT right-of-way or easements will be seeded with desirable plant species, as recommended by the MDT Botanist. Revegetation will be conducted in accordance with MDT Standard Specifications. Vegetative control would be the most cost-effective tool available for removal of contaminants from highway runoff.
		All Build Alternatives	**Create an erosion control and sediment plan.** An erosion control and sediment plan in compliance with the Montana Pollutant Discharge Elimination System regulations (ARM 17.30.1301 et seq.) would be created and submitted to MDEQ's Water Quality Division to minimize erosion and sedimentation during and following construction. Best management practices (BMPs) would be used in the design of this plan.
11. Wetlands	Loss of wetland areas by using new right-of-way.	All Build Alternatives	**Do not discharge dredged or fill material into wetlands unless mitigated.** Except as provided under CWA Section 404(b)(1) guidelines, the COE and the EPA would not allow dredged or fill material to be discharged into wetlands unless appropriate and practicable steps were taken to avoid or minimize potential adverse impacts on the wetlands. **Implement mitigation measures.** • **Avoid.** Avoid potential wetland impacts to the maximum extent practicable. • **Minimize.** Minimize unavoidable wetland impacts to the extent appropriate and practicable. • **Compensate.** Compensate for unavoidable adverse impacts to wetlands that remain after all appropriate and practicable minimization has been required. See *Section 4.11.2.6, Mitigation,* for specific mitigation measures.
12. Water Bodies and Aquatic Resources	Adverse impacts on aquatic habitat, fish, or other aquatic resources in water bodies.	All Build Alternatives	**Implement stormwater controls and BMPs**. During and after construction, stormwater controls and BMPs designed and constructed to prevent contamination from entering water bodies would be implemented. **Follow permit provisions**. Provisions listed in permits from MFWP, COE, and MDEQ would be followed.

TABLE S-4

Summary of Operations-Related Mitigation Measures[1]

Resources Area or Activity[2]	Description of Impact	Alternative Causing Impact	Potential Mitigation Measure
14. Wildlife Resources	New weeds in wildlife habitat.	All Build Alternatives	**Control noxious weeds.** MDT will control noxious weeds within the project limits during construction.
	New vegetation in wildlife habitat.	All Build Alternatives	**Time reclamation**. Reclamation of disturbed construction zones, such as ditches and embankments, would be timed in accordance with the most current version of MDT's *Erosion and Sediment Control Best Management Practices Manuals* using a seeding mix of desirable species. If revegetation was necessary after weed control, the seed mix would be determined by the MDT reclamation specialist and would be included in project construction specifications.
16. Floodplains	Encroaching on floodplains.	All Build Alternatives	**Avoid floodplains and floodways**. To the extent practicable, floodplain and floodway impacts greater than 0.15 m (0.50 ft) would be avoided during the design of the alternative selected.
			Follow design standards. The proposed project would be designed in compliance with E.O. 11988, *Floodplain Management*. State of Montana drainage design standards would be applied to achieve results that would not increase or significantly change the flood elevations and/or limits.
			Assess floodplain impacts. To evaluate such things as levee effects, a qualitative assessment of specific direct floodplain impacts would be conducted during final design of the alternative selected. That assessment would include hydraulic modeling to simulate water surface profiles for each existing and proposed structure.
		Alternative 1	**Appropriately design bridge.** The bridge over Rock Creek associated with US 310 would span the Rock Creek floodway. The proposed bridge design would avoid placing structures or fill within the floodway and would comply with Montana statutes specifying that such structures not increase water surface elevation from the base flood elevation greater than 0.15 m (0.50 ft). The bridge would also be designed with appropriate erosion control measures.
			Potentially conduct a hydraulic analysis. Due to the proposed bridge construction, a hydraulic analysis might be required for Rock Creek.

TABLE S-4

Summary of Operations-Related Mitigation Measures[1]

Resources Area or Activity[2]	Description of Impact	Alternative Causing Impact	Potential Mitigation Measure
19. Visual Resources	Without corridor development regulations, the visual quality of the corridor might adversely affect development outside the corridor.	All Build Alternatives	**Lessen visual effects**. If practical, techniques would be employed to lessen the visual effects of typical rock cuts and bridge abutments at stream crossings. **Create natural-looking rock cuts.** As appropriate, natural-looking rock cuts with non-linear edges that have rounded edges resembling adjacent, existing bluffs would be created. **Revegetate.** Revegetation practices such as reintroducing desirable plant species, creating pockets in newly graded slopes for plantings, and revegetating in ways that do not result in a linear edge would be implemented.
21. Geology and Soils	Possibility of cut slope failures.	All Build Alternatives	**Follow water quality mitigation measures.** Follow the mitigation measures described for *10. Water Flow and Quality* in Tables S-4 and S-5.

[1]Information based on conceptual design and modifications may be necessary as the design process continues.
[2]The numbers used in this column correspond with the subsections in Chapter 4.

TABLE S-5

Summary of Construction-Related Mitigation Measures[1]

Resources Area or Activity[2]	Description of Impact	Alternative Causing Impact	Potential Mitigation Measure
1. Land Use	Temporary road closures or restrictions.	All Build Alternatives	**Keep county commissioners informed.** MDT would keep the county commissioners informed about the project by providing updates to the commissioners at their request and by attending county commissioner meetings, if appropriate, to address community and business concerns. This would satisfy the Carbon County Growth Policy, which specifically requests that the County Commissioners be engaged in the development process.
3. Social Conditions	Construction-related traffic delays.	All Build Alternatives	**Keep county commissioners informed.** The county commissioners will then be responsive to their constituents and will help with problem solving.
			Develop a traffic control plan. A traffic control plan would be required with a response strategy for emergency vehicles needing to travel through the construction area.
		Alternatives 1, and 3A	**Provide flaggers and signs.** As appropriate, traffic controllers would use flaggers and signs to reduce congestion at the locations where the new road leaves and reenters the existing alignment.
		Alternatives 3A and 3B	**Use a pilot car.** A pilot car would be used during lane restrictions (if necessary) to maintain public safety.
		Alternatives 5A and 5B (preferred)	**Address traffic safety and traffic delays.** Traffic safety would be addressed and traffic delays would be minimized in the section of construction where the four-lane expansion would use the existing alignment and where traffic-turning activities would occur during construction at the US 310 interchange.
4. Transportation Right-of-Way and Relocations	Disruption of access to business, residence, and agricultural lands.	All Build Alternatives	**Make prior arrangements.** Arrangements would be made prior to the start of each phase of construction to maintain access.
			Designate alternative access points. Alternative access points would be designated for impacted businesses, residences, and farmlands.

TABLE S-5

Summary of Construction-Related Mitigation Measures[1]

Resources Area or Activity[2]	Description of Impact	Alternative Causing Impact	Potential Mitigation Measure
5. Economic Conditions	"Through traffic" travelers might stop at more convenient establishments outside the immediate construction zone.	All Build Alternatives	**Create a traffic control plan**. A traffic control plan would be created to maintain traffic safety and provide opportunities for vehicle patrons to leave and reenter the roadway from roadside business establishments.
7. Pedestrian and Bicycle Considerations	Disruption of access to pedestrian and bicycle facilities	All Build Alternatives	**Make arrangements.** Prior to the start of each phase of construction, arrangements would be made to maintain access or to designate alternative access points for pedestrian and bicycle facilities.
8. Air Quality	Air emissions generated by construction activities	All Build Alternatives	**Minimize air quality impacts.** In accordance with MDT Standard Specifications, contractors are required to operate in compliance with applicable federal, state, and local air quality standards. **Obtain an air quality permit, if necessary**. In accordance with MDT Standard Specifications, contractors are required to operate in compliance with applicable federal, state, and local air quality standards.
9. Noise	Noise generated by construction activities.	All Build Alternatives	**Follow noise ordinances.** In accordance with MDT Standard Specifications, contractors are required to adhere to applicable noise laws, which may include local ordinances.
10. Water Flow and Quality	Changes to water flow and quality.	All Build Alternatives	**Obtain and adhere to permits and authorizations.** In accordance with MDT Standard Specifications, contractors are required to obtain and adhere to applicable permits and authorizations. Applicable permits and authorizations may include obtaining a 318 Authorization for short-term water quality standards for turbidity related to construction activity, preparing and maintaining an erosion control and sediment control plan for a Montana Pollutant Discharge Elimination System (MPDES) permit, obtaining a CWA Section 404 permit for dredge and fill in waters of the US, and obtaining a Stream Protection Act Notification (SPA 124). **Revegetate.** Contractors will be expected to re-establish permanent vegetation in disturbed areas within MDT right-of-way or easements. Areas will be seeded and/or planted with desirable plant species, as recommended by the MDT Botanist and in accordance with MDT Standard Specifications. **Provide erosion control measures.** Contractors will be expected to adhere to MDT's Erosion and Sediment Control Best Management Practices Manuals through use of BMPs such as fiber mats, catch basins, silt fences, and sediment barriers.

TABLE S-5

Summary of Construction-Related Mitigation Measures[1]

Resources Area or Activity[2]	Description of Impact	Alternative Causing Impact	Potential Mitigation Measure
11. Wetlands	Loss of wetland area.	All Build Alternatives	**Follow wetlands and water quality measures**. The mitigation measures described for *11. Wetlands* in Table S-4 and for *10. Water Flow and Quality* in Tables S-4 and S-5 would be followed.
12. Water Bodies and Aquatic Resources	Increased sediment delivery to water bodies, degrading aquatic resources.	All Build Alternatives	**Minimize, avoid, or prevent adverse impacts.** Measures to minimize, avoid, or prevent some of the potential for adverse impacts on natural resources would be implemented. For example, MDT and the Montana Transportation Commission have adopted MDT's *Erosion and Sediment Control Best Management Practices Manuals*, which contains contractor requirements that minimize, avoid, or prevent some of the potential for adverse impacts on natural resources. **Abide by authorizations. T**he required authorization to perform work in streams would be secured and the conditions set forth would be followed. **Use standard specifications.** Use the most current version of *MDT's Standard Specifications for Road and Bridge Construction* to prevent water quality degradation from erosion and runoff, thereby reducing potential impacts on aquatic resources.
	Contamination from accidental spills, leakage, and runoff or leaching of petroleum products and other potentially toxic substances.		**Implement stormwater controls and BMPs.** During and after construction, stormwater controls and BMPs designed and constructed to prevent contamination from entering water bodies would be implemented. **Abide by permits**. Provisions listed in permits from MFWP, COE, and MDEQ would be followed.
14. Wildlife Resources	Impacts to wildlife habitat and populations.	All Build Alternatives	**Follow wildlife resources measures**. Follow the mitigation measures described for 14. Wildlife Resources in Table S-4. **Follow standard specifications.** Implementation of MDT standard specifications for road and bridge construction.
	Disturb nesting birds.	All Build Alternatives	**Search for nests.** Searches for nests would be conducted in accordance with MBT conventions required by the FWS. **Time construction**. As necessary, construction would be timed or distractive measures would be used to avoid disturbance of nests in order to comply with the Migratory Bird Treaty Act.

TABLE S-5

Summary of Construction-Related Mitigation Measures[1]

Resources Area or Activity[2]	Description of Impact	Alternative Causing Impact	Potential Mitigation Measure
	Disturb habitat.	All Build Alternatives	**Maintain vegetation.** To re-establish permanent vegetation, disturbed areas within MDT right-of-way or easements will be seeded with desirable plant species, as recommended and determined feasible by the MDT Botanist.
	New hazards for raptors.	All Build Alternatives	**Raptor-proof facilities**. Electrical facilities that are relocated within MDT right-of-way as a result of this project would be raptor-proofed in accordance with MDT policy.
15. Threatened and Endangered Species and State Species of Concern	Impacts to bald eagles—State species of concern	All Build Alternatives	**Locate nests.** Prior to construction, MDT would contact and coordinate with FWS and MFWP to reconfirm the locations of known nests, roosts, or concentration areas occurring within 1.6 km (1 mi) of the project. **Coordinate construction restrictions**. MDT would discuss and coordinate construction restrictions with FWS and MFWP, as appropriate to the location, setting, and status of known or discovered nests, roosts, or concentration areas. Although they would be site specific, typical construction restrictions will include, if necessary, the following: • **Avoiding active nests March 1 to May 15.** High intensity activities (gravel crushing, pavement milling, heavy equipment operations, and so forth) or locating or placing staging areas, stockpile sites, borrow sites, or production processing or mixing plants would not be conducted within 0.8 km (0.5 mi) of an active nest between March 1 and May 15. • **Avoiding active nests May 15 to July 15.** High-intensity activities (gravel crushing, pavement milling, heavy equipment operations, and so forth) or locating or placing borrow sites, or production processing or mixing plants would not be conducted within 0.4 km (0.25 mi) of an active nest between May 15 and July 15. • **Avoid roost sites and concentration areas.** Temporal and spatial restrictions would be applied within 0.4 km (0.25 mi) of roost sites and concentration areas during the seasons that these were being actively used. Restrictions to work might be extended or modified in coordination with, and subject to approval by, FWS and MFWP
16. Floodplains	Encroachment on floodplains.	All Build Alternatives	**Obtain a joint floodplain development permit, if necessary.** If impacts to floodplains were unavoidable, a joint floodplain development permit application would be submitted to the Montana Department of Natural Resources and Conservation. That permit would have to be approved before construction activities began. **Consult with agencies.** The COE, FEMA, and floodplain agencies for Montana State, Carbon County, and Yellowstone County would be consulted prior to construction.

TABLE S-5

Summary of Construction-Related Mitigation Measures[1]

Resources Area or Activity[2]	Description of Impact	Alternative Causing Impact	Potential Mitigation Measure
17. Cultural Resources	Discovery of cultural resources.	All Build Alternatives	**Cease construction.** If archeological resources are discovered during the construction phases of the proposed project, construction would cease immediately. **Professional Consultation.** To identify, evaluate the significance of, and determine appropriate future actions related to the archeological/historical resource(s), the MDT archeologist and/or historian would be consulted and would work with the Montana State Historic Preservation Office, as appropriate.
18. Hazardous Materials	Encountering hazardous materials in waste collection areas.	Alternatives 1, 2, 5A, and 5B (preferred)	**Waste collection area.** Materials contained in the waste collection areas identified within the footprints would be handled and disposed in special ways such as the following: • **Evaluate.** The waste collection area would be evaluated to determine if special handling would be required. • **Deposit in landfills.** Materials in the waste collection area would be deposited in landfills approved for those materials.
	Demolishing buildings that contain asbestos or other hazardous materials.	All Build Alternatives	**Contaminated buildings**. It would be determined whether buildings to be demolished were contaminated with asbestos-containing-material or lead-based-paint wastes. If they were contaminated, the materials would be properly disposed. • **Use preliminary site investigations (PSIs)**. PSIs would identify the location and quantity of asbestos-containing-material and lead-based-paint wastes, if any, that would be abated prior to demolition. • **Sample.** Buildings containing lead-based paint or other surface coatings containing lead would be sampled to determine the characteristics of the debris for appropriate disposal. • **Develop a remediation/reclamation plan**. A remediation/reclamation plan would be developed, if needed, in consultation with MDEQ and the counties. • **Properly remove and dispose.** Regulated asbestos-containing materials containing more than 1 percent asbestos would be removed and properly disposed in approved locations prior to building demolition.

TABLE S-5

Summary of Construction-Related Mitigation Measures[1]

Resources Area or Activity[2]	Description of Impact	Alternative Causing Impact	Potential Mitigation Measure
			• **Inspect.** Structures slated for relocation or demolition would be inspected for asbestos-containing material by a state-licensed inspector. • **Complete appropriate form.** A National Emissions Standards for Hazardous Air Pollutants Demolition/Renovation Notification form would be filed with MDEQ for relocated or demolished structures.
	Encountering home heating oil storage tanks and fuel lines.	All Build Alternatives	**Home heating oil storage tanks.** Home heating oil storage tanks (underground and aboveground) and associated fuel lines that might exist at residences that would be displaced would be identified and properly disposed. • **PSIs.** PSIs would determine if any storage tanks exist on the property. • **Standard specifications.** Procedures for removal and disposal of storage tanks and associated contaminated soil would be in accordance with the most current version of MDT's *Standard Specifications for Road and Bridge Construction*.
	Encountering contaminated soil.	All Build Alternatives	**Contaminated soil.** Contaminated soil would be identified and properly disposed. • **PSIs.** PSIs would determine the level of soil contamination. • **Standard specifications.** Disposal of contaminated soil, if needed, would be conducted in accordance with the most current version of MDT's *Standard Specifications for Road and Bridge Construction*.
	Encountering PCBs.	All Build Alternatives	**PCBs.** PCBs would be identified and properly disposed. • **PSIs.** PSIs would be performed to determine if PCBs were present in electrical transformers or in soils around electric utility facilities that would be impacted by the project. If PCBs were discovered, a remediation/disposal plan would be developed in consultation with MDEQ.
21. Geology and Soils	Excavations, fill areas, and earthwork.	All Build Alternatives	**Follow water quality measures.** Follow the mitigation measures described for *10. Water Flow and Quality* in Tables S-4 and S-5.

[1] Information based on conceptual design and modifications may be necessary as the design process continues.
[2] The numbers used in this column correspond with the subsections in Chapter 4.

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ACRONYMS AND ABBREVIATIONS

Metric Conversions

To assist the reader, this document, where appropriate, includes metric and English units side-by-side, such as 13.7 km (8.5 mi). The following information briefly summarizes the conversion factors and units used in this document:

Metric Units	English Units	Conversion Factor (Metric to English)
centimeter (cm)	inch (in)	0.3937
meter (m)	foot (ft)	3.2808
cubic meters (m^3)	cubic feet (ft^3)	35.3147
kilometer (km)	mile (mi)	0.6214
hectare (ha)	acre (ac)	2.471

Acronyms and Abbreviations

AADT .... annual average daily traffic
AASHTO .... American Association of State Highway and Transportation Officials
ac .... acre(s)
ADT .... average daily traffic
agencies .... federal and state regulatory and cooperating agencies
ARM .... Administrative Rules of Montana
AST .... aboveground storage tank
BLM .... U.S. Bureau of Land Management
BMP .... Best Management Practice
BNSF .... Burlington Northern Santa Fe
BSA .... Big Sky Acoustics
CFR .... Code of Federal Regulations
cfs .... cubic feet per second
cm .... centimeter(s)
cm/sec .... centimeters per second
cms .... cubic meters per second
COE .... U.S. Army Corps of Engineers

CWA .... Clean Water Act
dB .... decibel
dBA .... decibel (A-weighted scale)
DHV .... design hourly volumes
EIS .... Environmental Impact Statement
E.O. .... Executive Order
EPA .... U.S. Environmental Protection Agency
ESA .... Endangered Species Act
FAC .... facultative
FACU .... facultative upland
FACW .... facultative wetland
FEMA .... Federal Emergency Management Agency
FHWA .... U.S. Department of Transportation, Federal Highway Administration
FIRM .... Flood Insurance Rate Maps
FR .... *Federal Register*
ft .... foot(feet)
FWS .... U.S. Fish and Wildlife Service
GLO .... General Land Office
ha .... hectare(s)
I-90 .... Interstate 90
in .... inch(es)
km .... kilometer
km/h .... kilometers per hour
L_{eq} .... steady-state noise sound level
$L_{eq}(h)$ .... steady-state noise sound level over 1 hour
LOS .... level of service
m .... meter(s)
MBT .... migratory bird treaties
MBTA .... Migratory Bird Treaty Act of 1918
MCA .... Montana Code Annotated
MDEQ .... Montana Department of Environmental Quality
MDT .... Montana Department of Transportation
MEPA .... Montana Environmental Policy Act
MFWP .... Montana Fish, Wildlife and Parks
mi .... mile(s)
MNHP .... Montana Natural Heritage Program

mph .... miles per hour
MSATs .... Mobile Source Air Toxics
MT-GAP .... Montana Gap Analysis Project
MWAM .... Montana Wetland Assessment Method
NA .... not applicable
NAAQS .... National Ambient Air Quality Standards
NEPA .... National Environmental Policy Act
NHPA .... National Historic Preservation Act
NHS .... National Highway System
NI .... no indicator
NRCS .... Natural Resources Conservation Service
NRHP .... National Register of Historic Places
NRIS .... Natural Resource Information System
OBL .... wetland obligate
PCB .... polychlorinated biphenyl
PEM .... palustrine emergent marsh
pers. comm. .... personal communication
PFO .... palustrine forest
PM 2.5 .... particulate matter less than 2.5 microns in diameter
PM 10 .... particulate matter less than 10 microns in diameter
PSI .... Preliminary Site Investigation
PSS .... palustrine scrub-shrub
PTSF .... percent of time spent following
PTW .... U.S. 212's presently traveled way
RC&D .... Resource Conservation and Development
RP .... reference post (also known as mile post)
RUB .... riverine unconsolidated bottom
SCS .... U.S. Department of Agriculture, Soil Conservation Service
SHPO .... State Historic Preservation Office
SIP .... State Implementation Plan
sp. .... species (used when species is unknown or unspecified)
spp. .... plural of sp. (multiple unknown species)
TDM .... Transportation Demand Management
TMDL .... total maximum daily load
TRB .... Transportation Research Board
TSM .... Transportation System Management

TSM/TDM .....Transportation System Management and Transportation Demand Management
TWLTL ....two-way left-turn lane
US 212 ..........U.S. Highway 212 and U.S. Highway 310 project route
US 310 ..........U.S. Highway 310
USC..........U.S. Code
USDA..........U.S. Department of Agriculture
USDI .... U.S. Department of the Interior
USFS .... U.S. Forest Service
USGS ..........U.S. Geological Survey
UST ....underground storage tank
VMT.......... vehicle miles traveled
vpd..........vehicles per day
vph..........vehicles per hour

CHAPTER 1 PURPOSE AND NEED

This transportation project is being proposed by the Montana Department of Transportation (MDT) in cooperation with the U.S. Department of Transportation, Federal Highway Administration (FHWA). The existing two-lane highway is a 17.4-kilometer (km) (10.8-mile [mi]) portion of U.S. Highway 212/U.S. Highway 310 (US 212/310) in south-central Montana, along with a short portion of U.S. Highway 310 (US 310) southwest of Rockvale (see Figure 1-1). For simplicity, the route is referred to as US 212 in the remainder of this Draft Environmental Impact Statement (DEIS).

This project was initially proposed by MDT and approved by the Montana Transportation Commission in 1998. The proposed project was included in Amendment 1 of the 1999 Statewide Transportation Improvement Program, which indicated its construction would occur after State Fiscal Year 2007. The Notice of Intent to prepare an EIS was published in the *Federal Register* (FR) on July 14, 2000 (65 FR 136).

US 212 is part of the National Highway System (NHS), and is classified by MDT as a Principal Arterial. The route of the proposed project extends north-northeasterly from the Rockvale community to south of the bridge crossing the Yellowstone River south of the City of Laurel between reference post (RP; also known as mile post) 42.1 and RP 52.9. Note that the original project limits set by MDT began at RP 42.6. However, two of the project alternatives developed (Alternative 1—Far West Bench and Alternative 3A—Near Existing Alignment) would extend the southwest project limit to RP 42.1 (see Figure 1-2). The project area is located in Carbon and Yellowstone counties.

This document consists of three parts—the Draft EIS itself, the Section 106 Determination of Effect, and appendices—structured as follows:

- Part I: Draft Environmental Impact Statement
  - Signature Page
  - Summary
  - Acronyms and Abbreviations
  - Chapter 1, Purpose and Need
  - Chapter 2, Alternatives
  - Chapter 3, Affected Environment
  - Chapter 4, Environmental Consequences and Mitigation
  - Chapter 5, List of Preparers
  - Chapter 6, Distribution List
  - Chapter 7, Comments and Coordination
  - Chapter 8, Sources and Supporting Documents
- Part II: Section 106 Determination of Effect

- Appendices
  - Appendix A, Intersection Alternatives
  - Appendix B, Species Information
  - Appendix C, Farmland Conversion Impact Rating for Corridor Type Projects
  - Appendix D, Noise Figures
  - Appendix E, Clean Water Act Section 404(b)(1) Evaluation
  - Appendix F, Glossary
  - Appendix G, Coordination Letters

This Purpose and Need chapter includes the following sections:

- Introduction
- Purpose
- Need

1.1 Introduction

The purpose of the proposed project is to improve safety for local and regional traffic needs, accommodate capacity needs, accommodate local circulation and access needs, and support the regional mobility of goods and people.

The proposed project's part of US 212 serves local traffic between the unincorporated communities of Rockvale and Silesia and the City of Laurel. Numerous residences receive access directly from US 212.

As part of the NHS, the portion of US 212 addressed by the proposed project is an important link in a system that includes Interstate Highways and other principal arterials that are vital to the nation's highway transportation network. Since completion in 1936, US 212 has become a popular tourist route. On a regional level, US 212 is the main connection between Interstate 90 (I-90) in Laurel and the Red Lodge and Yellowstone Park recreational areas. US 212 becomes the Beartooth Highway south of Red Lodge and travels through the Custer, Shoshone, and Gallatin National Forests. The Beartooth Highway provides access to one of the highest areas in the lower 48 states, with 20 peaks reaching over 12,000 feet (ft) in elevation. The route was originally pioneered in 1882, when General Sheridan surveyed a route across the mountains from Cooke City to Billings. In Rockvale, US 310, which connects to Bridger, Montana, and the state of Wyoming, joins US 212.

The project has been initiated because of rising safety and operation concerns such as:

- Truck-related accident rates within the project limits on US 212 are currently above the statewide average.
- The accident severity rate is substantially higher than the statewide average.
- Access-related accidents involving most types of vehicles prevail within the northeast portion.

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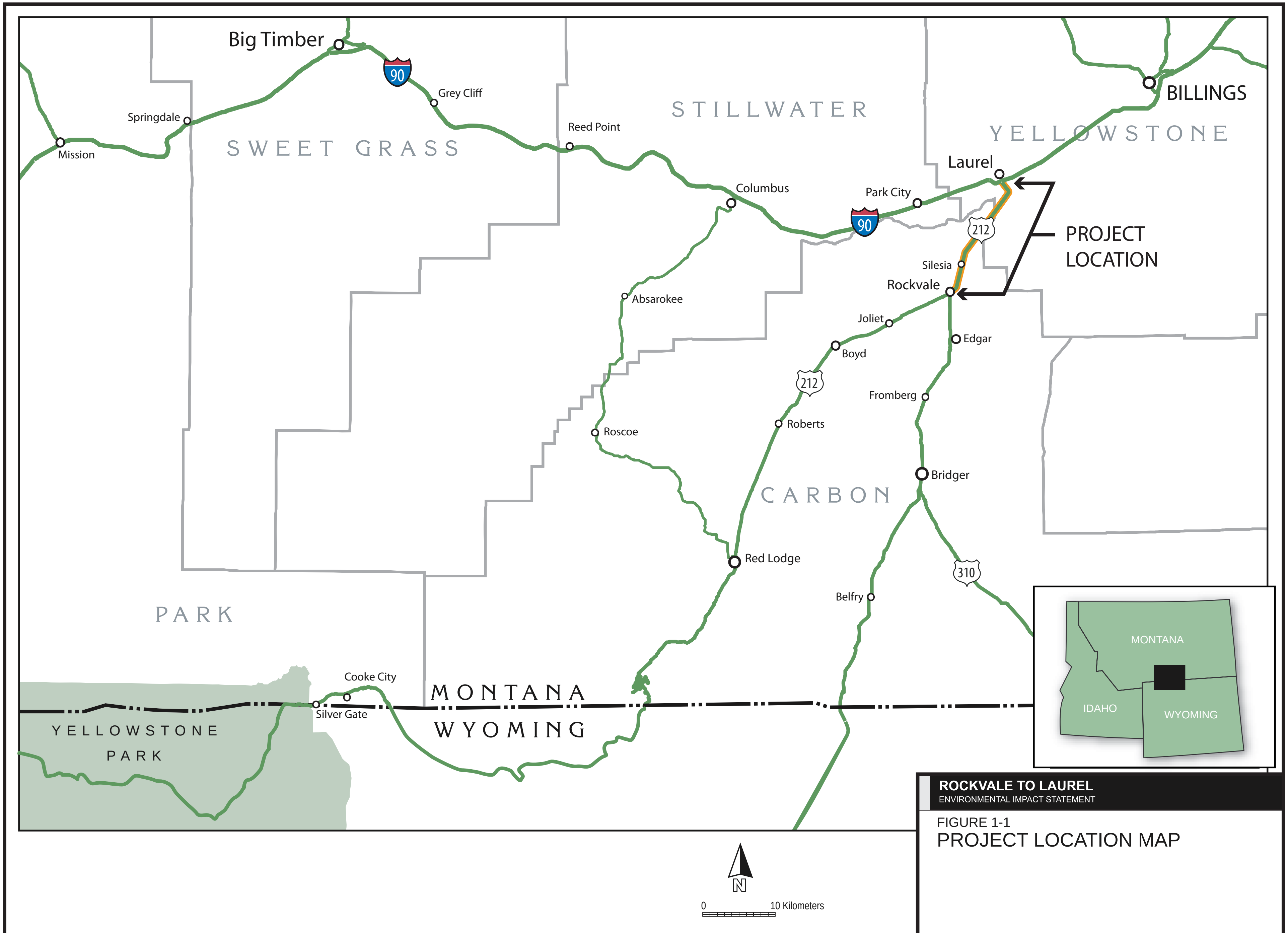

ROCKVALE TO LAUREL
ENVIRONMENTAL IMPACT STATEMENT

FIGURE 1-1
PROJECT LOCATION MAP

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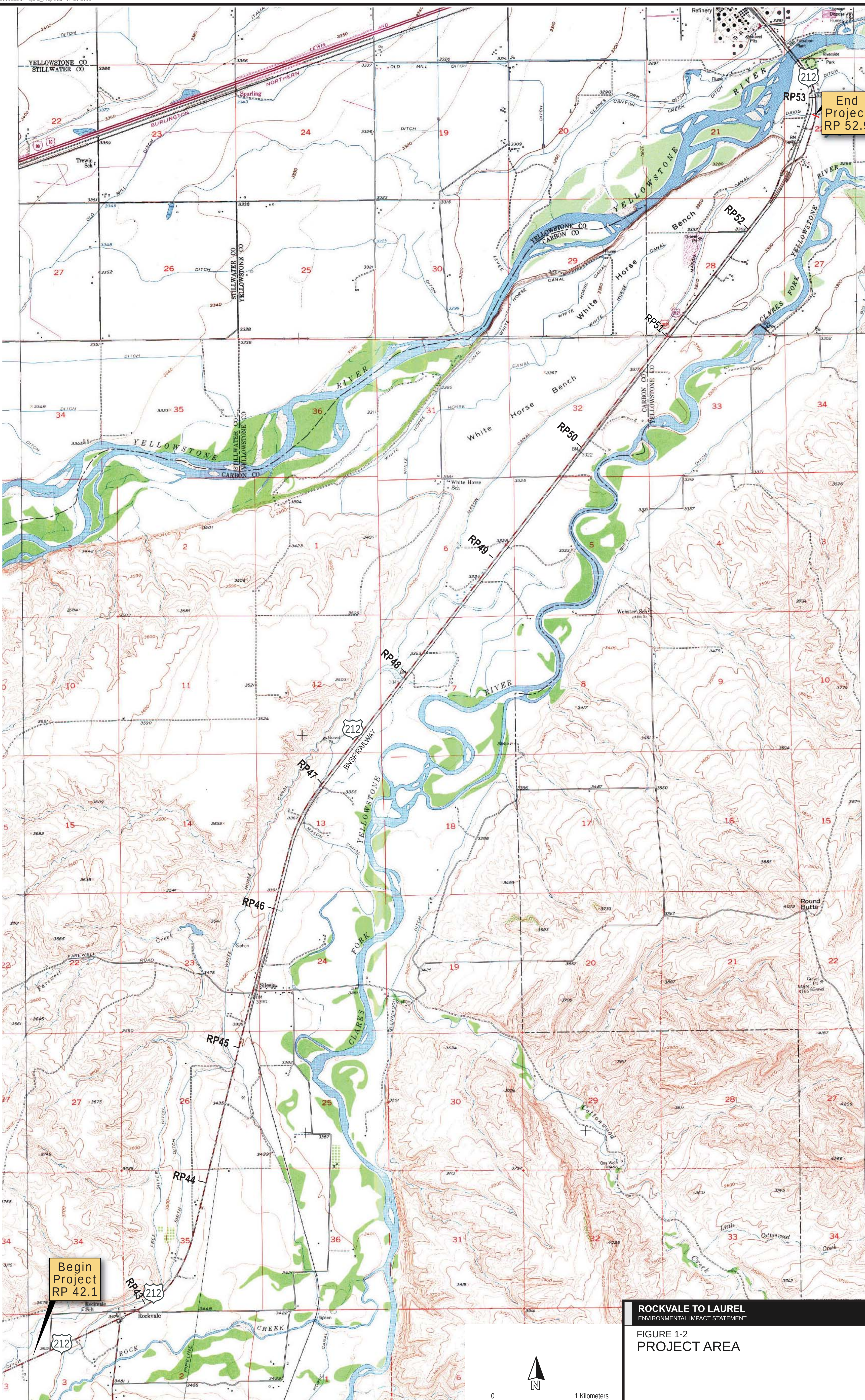

ROCKVALE TO LAUREL
ENVIRONMENTAL IMPACT STATEMENT

FIGURE 1-2
PROJECT AREA

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- Traffic becomes backed up on this rural highway. Reasons for these traffic delays include:
  - It is a two-lane highway.
  - The Burlington Northern Santa Fe (BNSF) Railway tracks are close to the highway. The distance for storing vehicles stopped between US 212 and railroad crossings (vehicle storage distance) is inadequate. Therefore, when waiting for trains to pass, vehicles trying to turn on to side roads are sometimes forced to remain on US 212. These stopped vehicles interfere with through traffic movement because through traffic often cannot safely pass them.
- This portion of US 212 would be hard to modify because its right-of-way is physically constrained.
  - The Clarks Fork Yellowstone River, which is directly east of US 212, has carved a wide band of oxbows reaching across either side of the narrow valley.
  - Beginning at Silesia and continuing north, the BNSF Railway closely parallels US 212 to the east.
  - To the west, a ridge separates the road from a plateau above US 212. Sandwiched between US 212 and the ridge are several residences that receive direct access from US 212 or local connecting roads to US 212.

1.2 Purpose

The purpose of the proposed project is to:

- Improve safety for local and regional traffic needs
- Accommodate capacity needs for local and regional travelers over the next 20 years and beyond using prudent planning principles
- Accommodate the variety of transportation needs along US 212, including local circulation and access for residents with existing access needs
- Support mobility of goods and people connecting I-90 with the rural communities of Silesia, Rockvale, Red Lodge, and Bridger, and with destinations in Wyoming

1.3 Need

The following critical needs for improving the US 212 transportation corridor between Rockvale and Laurel have been identified:

- There is conflict between local and regional traffic needs, including slow versus faster travel desires, sightseeing versus destination-oriented driving, and frequent stops versus through connectivity with other portions of the NHS.

- Accidents are most frequently located at points of access (such as driveways and local roadways connecting to US 212) and stationary objects.
- The accident severity rate and truck involved accident rate exceeds statewide averages.
- The existing two-lane US 212 is undersized for carrying anticipated traffic volumes in the next 20 years and beyond.
- The distance for storing vehicles stopped between US 212 and railroad crossings (vehicle storage distance) is inadequate.
- Residential development and other physical features constrain the ability to widen the existing right-of-way within the project area.

The following sections of this chapter provide details supporting the purpose and need of the project.

1.3.1 Physical Deficiencies of the Existing Roadway

Within the project limits, US 212 has several physical deficiencies and capacity limitations.

- **Narrow Shoulders.** The existing roadway has two driving lanes, each with a minimum width of approximately 3.7 meters (m) (12 ft). The shoulders are 1.2-m (4-ft) wide. MDT's Geometric Design Criteria Route Segment Plan calls for 2.4-m (8-ft) shoulders.
- **Sight Distances.** The terrain along this part of US 212 is generally level. However, approximately 20 percent of the road traverses through hills and valleys. In these areas, the highway fails to meet applicable MDT and American Association of State Highway and Transportation Officials (AASHTO) standards for sight distances, and three of the 54 vertical curves do not meet minimum standards.
- **Railroad Underpass Deficiencies.** An existing railroad underpass near the proposed project's northeasterly end poses both sight distance and vertical clearance deficiencies.
- **No-Passing Zones.** Approximately 7.7 km (4.8 mi), or 47 percent of the roadway within the project limits is currently marked with no-passing zones.
- **Lack of Turning Lanes.** The existing roadway alignment was designed in 1949. There are no turning lanes to remove left turning movements from the travel way within the project area except at the junction of US 212 and US 310 in Rockvale.
- **Many Access Points.** There are approximately 103 access points (driveways and local roadways) connecting to US 212 throughout the project area. This is an average of about one access point per 175 m (570 ft). Sixty access points are concentrated in the northernmost 6.4 km (4.0 mi), which is about one access point per 105 m (350 ft).
- **Physical Constraints.** Topography and private property constrain the roadway on the west side. The east side is constrained by the BNSF Railway tracks from Silesia to Laurel.
- **Inadequate Vehicle Storage Space.** The storage space for vehicles on local access roads between US 212 and the railroad tracks is not adequate. Currently, the distance varies from 14.4 to 22.9 m (47 to 75 ft). In other words, while waiting for trains to pass, there is

only room for from one to three vehicles on access roads. Other vehicles waiting to turn onto the access roads must remain on US 212, thereby stopping through traffic movement. In some locations, the access roads provide inadequate storage for one tractor-trailer vehicle.

1.3.2 Transportation Demand

As part of the NHS, the portion of US 212 addressed by the proposed project is an important connection between Interstate 90 (I-90) in Laurel and the Red Lodge and Yellowstone Park recreational areas. Additionally, it connects to Bridger, Montana, and the state of Wyoming. Thus, the transportation demand reflects the need to provide both local and regional mobility of goods and people.

Average daily traffic (ADT) volumes in 2000 ranged from 5,160 vehicles per day (vpd) at the south end of the project (north of the junction with US 310) to a maximum of 5,900 vpd at the Yellowstone/Carbon County line. Approximately 8 percent of the volume is classified as truck traffic. These volumes are forecast to increase by approximately 125 percent between 2000 and 2025, resulting in forecast ADT volumes of 11,590 vpd at the junction of US 212 and US 310 and 13,250 vpd at the county line. The forecasts were provided by the MDT and are based on 10-year historic traffic counts and an annual traffic growth rate of 2.75 percent between 2003 and 2025. Increased traffic volumes will occur regardless of future improvements to the transportation system. These ADTs translate into a design hourly volume (DHV) of 1,590 vehicles per hour (vph) (2025). Trucks make up 7.7 percent of the design hour traffic. Figure 1-3 shows US 212 traffic data and demand on the existing roadways. Figure 1-4 shows historic traffic growth.

Recent updates to the above noted traffic data indicates that the average daily traffic (ADT) volume in 2005 was 6800 vehicles per day (vpd) while the forecast 2030 volume is expected to increase by approximately 100 percent to 13,565 vpd. The 2030 design hourly volume (DHV) is projected at 1,630 vehicles per hour (vph). Truck traffic as a percent of ADT is expected to remain consistent with the previous projections.

The projected change is primarily due to growth projections for residential development in Montana. Table 1-1 shows that the project area of Carbon and Yellowstone counties will be keeping pace, exceeding the statewide population percentage growth projection through 2020.

TABLE 1-1
Projected Change in Population Between 2000 and 2020[a]

Area/Year	2000	2005[b]	2010	2020	Total Percent Growth
State of Montana	902,195	935,670	989,190	1,092,730	21%
Carbon County	9,552	9,902	10,600	11,670	22%
Yellowstone County	129,352	136,691	145,400	161,930	25%

Sources: [a]U.S. Census Bureau, NPA Data Service, Inc., 2003.
[b]Montana Department of Commerce, Census and Economic Information Center

1.3.3 Traffic Operations/Level of Service

Capacity analysis techniques presented in *Highway Capacity Manual 2000* (Transportation Research Board [TRB], 2000) are used to evaluate the ability of a roadway to carry existing or future traffic demand. The specific methodology applicable to existing US 212 is that for two-lane rural highways.

The basic premise for capacity analyses is to evaluate the ability to maintain a normal operating speed and maneuver to one’s destination without interference from other traffic. For the case of a two-lane roadway, vehicles traveling in a single direction are often inhibited by the lack of passing opportunities and the volume of opposing traffic. Thus, little traffic is required to create limiting traffic conditions on two-lane roadways. The chances of encountering or following a slow-moving vehicle increase rapidly with increasing traffic volumes. Some level of freedom, and thus a higher level of service (LOS), is afforded by the ability to pass. However, passing is limited by the percent of a given length of roadway where passing is restricted (no-passing zones) and the ability to find a sufficient gap in the opposing traffic stream to make a passing maneuver. Thus, the growing volume of traffic on US 212 and the fact that 47 percent of the project area is restricted as a no-passing zone degrades capacity and ease of movement on US 212.

Capacity analysis characterizes traffic operations in terms of LOS, ranging from LOS A to LOS F. LOS A has the best traffic operations (motorists can drive at their desired speed) and LOS E represents theoretical capacity (that is, the maximum service flow rate of vehicles). Table 1-2 presents qualitative definitions of operations expected for each LOS category for a two-lane roadway. In general, the LOS is based on quantification of the percent of time spent following (PTSF) slower vehicles on the highway.

Evaluation of the existing traffic volumes (DHV of 710 vph in 2000) indicates current operations are at LOS E. Based on a directional analysis, PTSF was 85.2 percent for the overall 17.4-km (10.8-mi) project section. The same analyses were performed for future conditions (DHV of 1,590 vph in 2025). The 2025 projections indicated that the overall 17.4-km (10.8-mi) project section would continue to operate at LOS E, with the PTSF increasing to 91.5 percent. These calculations characterize the operation of the overall corridor in general terms for a long length of highway.

A more definitive result is obtained by evaluating shorter critical sections on a directional basis. To accomplish this, the corridor was assessed by analyzing typical representative sections at both the north and south ends.

- **Northern Section.** The nature of the corridor varies in terms of both traffic volume and abutting land uses. The northernmost section between RP 51 and RP 53 represents the section that has the largest amount of abutting-occupied properties and access points; the greatest number of accidents per mile; the highest traffic volumes; and the greatest amount of no-passing zones along the corridor. Based on the directional analysis, the LOS for this section was computed as LOS E with a PTSF of 87.2 percent in 2005. It is projected that by 2025 this section would continue to operate at LOS E with a PTSF of 95.3 percent.

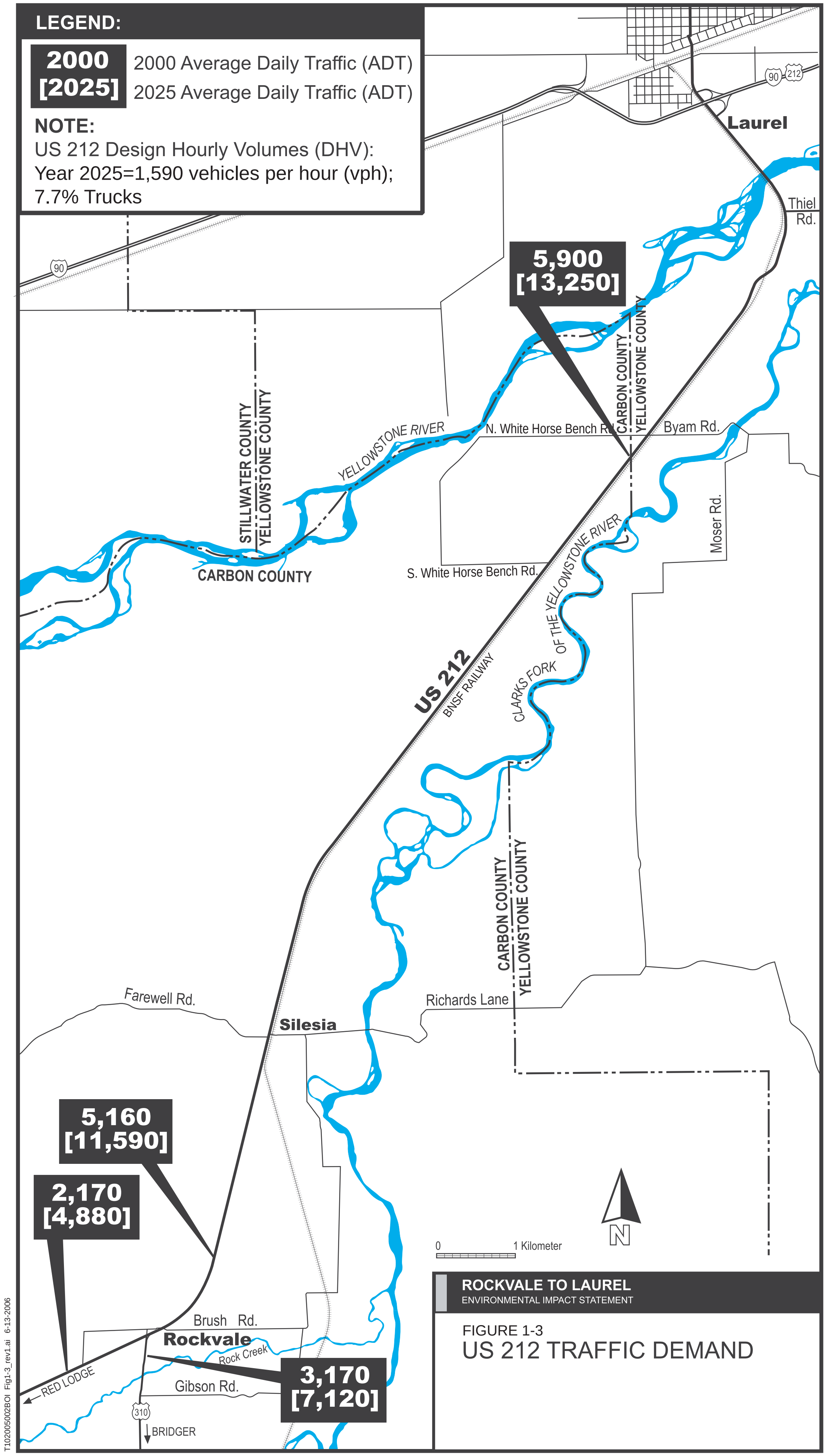

FIGURE 1-3
US 212 TRAFFIC DEMAND

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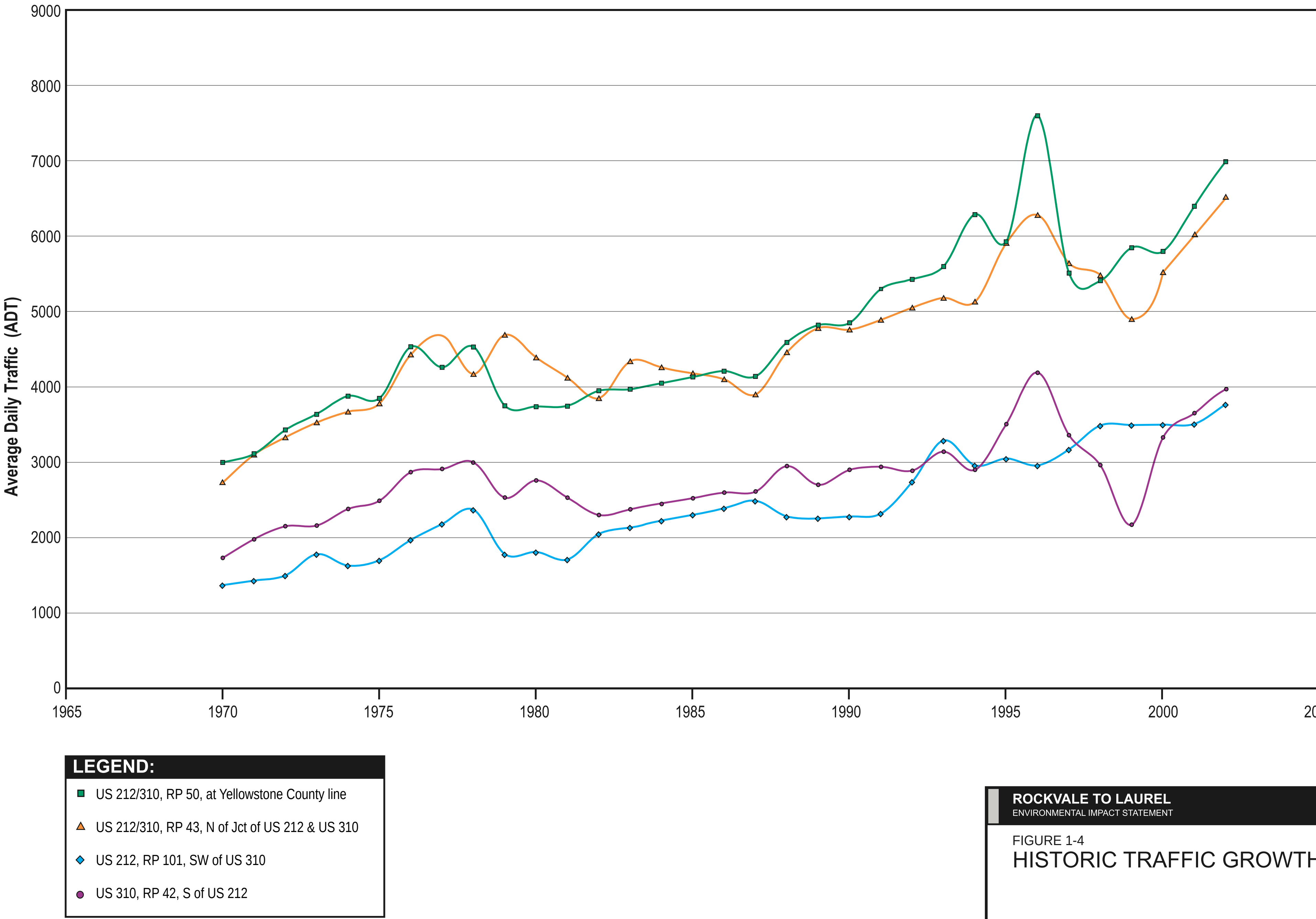

ROCKVALE TO LAUREL

ENVIRONMENTAL IMPACT STATEMENT

FIGURE 1-4

HISTORIC TRAFFIC GROWTH

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- **Southern Section.** Based on the directional analysis, the lower volume and less developed southern part of US 212 between RP 44 and RP 46 was computed as LOS E with a PTSF of 85.6 percent in 2005. It is projected that by 2025 this section would continue to operate at LOS E with a PTSF of 90.7 percent.

When there are conflicts between slow and typical traffic speeds, drivers become frustrated and impatient, sometimes performing passing movements that might result in unsafe conditions for traffic operations. MDT policy specifies LOS B as the desirable LOS for rural two-lane highways. This policy conforms with the guidelines of AASHTO as indicated in *A Policy on Geometric Design of Highways and Streets, 4th Edition* (2001).

TABLE 1-2
Level of Service (LOS) Definitions for a Two-Lane Roadway

Level of Service	Definition
A	Motorists are able to drive at their desired level of speed, resulting in average speeds of 55 mph or more. Passing demand is well below passing capacity, and platoons of three or more vehicles are rare. Drivers are delayed no more than 35 percent of their travel time by slow-moving vehicles. A maximum flow rate of 490 vph total in both directions may be achieved.
B	Speeds of 50 mph or slightly higher are expected on level terrain. Passing demand needed to maintain desired speeds becomes significant and approximately equals the passing capacity at the lower boundary of LOS B. Drivers are delayed in platoons approximately 50 percent of the time. Service flow rates of 780 vph (in both directions) can be achieved. Above this flow rate, the number of platoons increases dramatically.
C	Average speed still exceeds 45 mph on level terrain, even though unrestricted passing demand exceeds passing capacity. At higher volumes, chaining of platoons and significant reductions in passing capacity occur. Although traffic flow is stable, it is susceptible to congestion due to turning traffic and slow-moving vehicles. Percent time spent following may reach 65 percent. A service flow rate of approximately 1,190 vph total in both directions can be accommodated.
D	Speeds of 40 mph can still be maintained. Passing demand is very high, while passing capacity approaches zero. Mean platoon sizes of 5 to 10 vehicles are common. Turning vehicles and roadside distractions cause major shock-waves in the traffic stream. Motorists are delayed approximately 80 percent of the time. Maximum service flow rates of 1,830 vph total in both directions can be maintained.
E	Speeds may drop below 40 mph, and the percent time spent following is greater than 80 percent. Passing is virtually impossible, and platooning becomes intense as slower vehicles or other interruptions are encountered. Maximum service flow rates of 3,200 vph total in both directions are reached at this level.
F	This represents heavily congested flow, with traffic demand exceeding capacity. Volumes are lower than capacity, and speeds are highly variable.

Source: *Highway Capacity Manual 2000* (TRB, 2000), pp. 12-16.

The existing two-lane US 212 highway portion operates at a reduced capacity, failing to meet the LOS desired by MDT in the present and the future. Conflicts between slower and faster drivers must be resolved on US 212 before LOS B or improved traffic operations can be achieved.

1.3.4 Accident History and Safety

The existing corridor has high potential for continued development that would adversely impact traffic operations. Based on current land use and access regulations, there is a high probability that safety, as well as LOS, would be adversely affected with the addition of access points along the existing corridor. Current access management policies permit the addition of access points on the existing corridor, which might exacerbate safety and capacity conditions.

Between 1990 and 2000, MDT records indicate that there were 222 reported accidents (1.00 accidents per million vehicle miles) on US 212 within the project area. This rate is below the statewide average for similar highways, which is approximately 1.30 accidents per million vehicle miles. The all-vehicle severity rate (that is, the product of the severity index and the accident rate) for the US 212 project area was 2.67, which was slightly less than the statewide average rate of 3.11. However, trucks were involved in 24 out of the 222 accidents (10.8 percent). This rate is higher than the relative percent of trucks in the current traffic flow (7.7 percent). According to average rates reported by MDT, the truck-involved accident rate of 2.74 accidents per million vehicle miles within the project area is approximately 2.7 times higher than the statewide average for NHS routes of 1.01 accidents per million vehicle miles.

The most recent 5-year period of accident data indicates that the number of crashes, as well as the severity of those crashes, has increased compared to the 10-year period from 1990 to 2000. The total accident rate in the past 5 years is now approximately equal to the current statewide average rate (1.15 accidents per million vehicle miles) while the severity rate for the past 5 years now well exceeds the statewide average (3.12 vs. 2.61). The truck involved accident rate is now 1.15 accidents per million vehicle miles.

Tables 1-3 and 1-4 summarize the reported accidents by accident type and severity for the 10-year period between 1990 and 2000, and the 5-year period between 2002 and 2006, respectively. A review of the detailed accident data indicates that many of the accidents are related to stopping and turning maneuvers at access points such as private driveways, field approaches, and public roadways intersecting with US 212. Sideswipes, left-turn, and rear-end accidents account for 33 percent of the total accidents between 1990 and 2000, while sideswipes, right-angle, and rear-end accidents account for more than 37 percent of the total accidents between 2002 and 2006.

Between 1990 and 2000, almost 40 percent of the accidents were reported as “run-off-the-road” or “fixed-object” accidents. Between 2002 and 2006, 35 percent of the accidents were reported as “run-off-the-road,” “fixed-object,” or “overturn” accidents. This suggests the need for flatter embankment slopes within a wider clear zone on either side of the road to improve safety.

In addition, over the 10-year period from 1990 to 2000, MDT formally identified several “accident cluster” sites in the project area while there were no accident clusters identified between 2002 and 2006. Traffic safety studies have identified a number of potential

improvements within the study section of US 212 that might reduce the accident potential. The conceptual solutions include:

- Adding turn lanes to reduce conflicts at the Silesia access
- Widening the shoulder and the addition of "rumble strips"
- Flattening the slope in the vicinity of RP 44 to increase sight distance
- Adding speed advisory signs on existing curve signs

Although some of these improvements have been made, full implementation of these recommendations is limited by the existing right-of-way.

1.3.5 Access

The primary factor affecting safety, traffic operations, and overall mobility function of a highway is the number and locations of access to abutting properties and connecting streets. On two-lane highways, the number of access points per mile (that is, access density) impacts actual operating speeds, which affects the operating LOS. Table 1-4 lists the number of access points on US 212 grouped by RPs.

TABLE 1-3
Reported Accident Characteristics on US 212 RP 42.64 to RP 53.05 from 1990 to 2000

Accident Category	Number of Accidents	US 212	Statewide
Accident Severity			
Property damage only	127	57.2%	59.7%
Incapacitating injuries	32	14.4%	14.1%
Non-incapacitating injuries	27	12.2%	11.9%
Other injuries	32	14.4%	12.3%
Fatal accidents	4	1.8%	2.0%
Total	222	100.0%	100.0%
Total resulting injuries	173		
Total resulting fatalities	7		
Accident Type			
Other	18	8.1%	
Run off road	49	22.1%	
Fixed object	38	17.1%	
Animal	27	12.2%	
Subtotal	132	59.5%	60.0%
Rear end	50	22.5%	16.5%
Sideswipe same direction	13	5.9%	4.3%
Sideswipe opposite direction	7	3.2%	2.7%
Left turn same direction	3	1.4%	0.8%
Right angle	12	5.4%	13.3%
Head-on	5	2.3%	2.2%
Total	222	100.0%	100.0%

TABLE 1-4
Reported Accident Characteristics on US 212 RP 42.64 to RP 53.05 from 2002 to 2006

Accident Category	Number of Accidents	US 212	Statewide
Accident Severity			
Property damage only	87	57.6%	65.5%
Incapacitating injuries	21	13.9%	9.6%
Non-incapacitating injuries	17	11.3%	11.2%
Other injuries	21	13.9%	11.3%
Fatal accidents	5	3.3%	2.1%
Total	151	100.0%	100.0%
Total resulting injuries	102		
Total resulting fatalities	8		
Accident Type			
Other	1	0.6%	
Run off road	19	12.6%	
Fixed object	13	8.6%	
Overturn	22	14.6%	
Animal	24	15.9%	
Subtotal	79	52.3%	65.7%
Other	5	3.3%	1.9%
Rear end	32	21.2%	14.1%
Sideswipe same direction	9	6.0%	4.1%
Sideswipe opposite direction	6	4.0%	2.7%
Right turn same direction	0	0%	0.2%
Right turn opposite direction	0	0.0%	0.1%
Left turn same direction	2	1.3%	0.9%
Left turn opposite direction	0	0.0%	1.3%
Right angle	10	6.6%	7.0%
Head-on	8	5.3%	2.0%
Total	151	100.0%	100.0%

The project area includes 103 access points, most of which (79) are residential in nature. Eleven access points are multiple-use roads, which are public roads or a public access to multiple properties. Sixty access points occur within the northernmost 6.4 km (4.0 mi). The project area also includes three accident cluster sites identified between 1990 and 2000.

Within these accident cluster sites, the most frequent accidents by type are rear-end accidents, which are often caused by slow-moving vehicles turning off and on the highway. Since approximately 47 percent of the route within the project area is designated as a no-passing zone, there is great potential for turning vehicles to inhibit traffic flow. Many of the accidents that have occurred in the project area can be related to the incompatibility of high-speed through traffic with slower vehicles accessing residential areas and farmsteads.

TABLE 1-5
Existing Highway Access Points

Access Type	Beginning at Reference Post										
	43	**44**	**45**	**46**	**47**	**48**	**49**	**50**	**51**	**52**	**Total**
Total Access Points											
Multiple-Use Roads	-	1	2	1	-	1	1	2	2	1	11
Residence/Farm	6	6	5	6	1	5	6	13	24	7	79
Subtotal	**6**	**7**	**7**	**7**	**1**	**6**	**7**	**15**	**26**	**8**	**90**
Field Access	1	2	1	1	1	-	-	-	1	2	9
Other	1	1	1	-	-	-	-	-	1	-	4
Subtotal	**2**	**3**	**2**	**1**	**1**	**-**	**-**	**-**	**2**	**2**	**13**
Total	**8**	**10**	**9**	**8**	**2**	**6**	**7**	**15**	**28**	**10**	**103**
Railroad Crossing Access Points											
Multiple-Use Roads	-	-	1	-	-	1	-	-	1	-	3
Residence/Farm	-	-	-	2	-	3	2	3	2	1	13
Subtotal	**-**	**-**	**1**	**2**	**-**	**4**	**2**	**3**	**3**	**1**	**16**
Field Access	-	-	-	1	1	-	-	-	-	1	3
Other	-	-	-	-	-	-	-	-	-	-	0
Subtotal	**-**	**-**	**-**	**1**	**1**	**-**	**-**	**-**	**-**	**1**	**3**
Total	**-**	**-**	**1**	**3**	**1**	**4**	**2**	**3**	**3**	**2**	**19**

Currently, access to US 212 is essentially unlimited. The MDT District Office is responsible for approving modifications of existing access points and for granting new access points onto the highway. Abutters seeking to obtain new or improved access points must acquire a permit and comply with the requirements of MDT as defined in *Approach Standards for Montana Highways* (1983). The intent of the regulations is to provide for reasonable and safe access to highways while preserving the safety and utility of the highway to the maximum extent practicable. The regulations do not apply to existing access unless a change to that access is to be made. Because of the large amount of existing agricultural and undeveloped frontage along the highway, the potential exists for additional access points as well as for increased side-street and access-oriented traffic volumes. As the number of driveways and other access points along a highway increases, accident rates increase.

AASHTO has shown that for an undivided rural highway with 10 access points per mile, the accident rate would increase by 50 percent if the number of access points were to increase to 30 per mile (2001). AASHTO has further suggested that some degree of access management should be included in the development of a street or highway, particularly on a new facility where the potential for development exists. Along the northernmost section of US 212 near Laurel, the greatest proliferation of access points exists on the west side of the highway. This concentration of access points represents almost an urban access condition. The higher number of access points correlates to the higher number and frequency of accidents along the north end of the corridor.

Table 1-4 also lists the number of access points that cross the BNSF Railway tracks, which are adjacent and parallel to US 212 north from Silesia. The proximity of the railroad tracks to the roadway varies from only 19.8 m (65 ft) to 33.5 m (110 ft). Nineteen access points cross the railroad tracks, three of which are multiple-use roads. The BNSF Railway currently operates 10 or fewer trains per day, with an average of 100 cars per train. At 72 kilometers per hour (km/h) (45 miles per hour [mph]), it is estimated that a train could impact each of the 19 crossings for 2 to 3 minutes. When this occurs, because the vehicle storage distance between the railroad tracks and US 212 is too short, there is the potential for waiting vehicles to back up onto US 212. US 212 does not have adequate shoulder width for accommodating waiting vehicles stopped outside of the through-traffic lanes on US 212. In addition, large trucks or several vehicles waiting in line can also occupy a railroad grade crossing while waiting to enter US 212, potentially blocking the railroad crossing. This problem will become more frequent as side road and mainline road traffic increases. Thus, the number of crossings and their proximity to US 212 represent an existing and potential safety problem.

Improving clear zones (that is, the roadside border area available for safe use by errant vehicles) and widening the roadway would require a wider right-of-way. The railroad tracks to the east and the many residences to the west of US 212 restrict the potential for improvements along the existing alignment. Therefore, alternative alignments for US 212 to meet the improvement needs of the highway should be considered.

CHAPTER 2 ALTERNATIVES

2.1 Introduction

After gathering initial comments from interested members of the public and from federal and state regulatory and cooperating agencies (agencies), MDT and FHWA developed a full range of alternatives to address the Purpose and Need for the proposed project. The preliminary alternatives were presented during public scoping to gather additional comments from the public. After reviewing public input and evaluating engineering feasibility, safety, and environmental considerations for each alternative, MDT and FHWA screened and modified the preliminary alternatives based on the public's comments. The modified alternatives were then carried forward for detailed analysis.

Above any other factors, the alternatives considered must meet the project's purpose as defined in *Chapter 1, Purpose and Need*. The purpose of the proposed project is to improve safety for local and regional traffic needs, accommodate capacity needs, accommodate local circulation and access needs, and support the regional mobility of goods and people.

This chapter includes the following sections:

- Alternative Development and Evaluation
- Alternatives Considered
- Selection of a Preferred Alternative
- Alternatives Considered but Eliminated from Detailed Analysis
- Basis for Recommending the Preferred Alternative
- Permits and Other Governmental Actions

2.2 Alternative Development and Evaluation

The development of the alternatives was structured to meet the project purpose statements (refer to *Chapter 1, Purpose and Need*). Table 2-1 lists considerations in the process related to developing reasonable alternatives for meeting the project purpose (for example, expanded typical sections incorporating added lanes to meet capacity and passing safety needs; access management strategies; and so forth).

MDT and FHWA identified three general corridors for locating proposed new alignments—the West Bench, the East Bench, and the Existing Alignment. MDT and FHWA developed four preliminary build alternative alignments to potentially satisfy the Purpose and Need of the proposed project.

The build alternative alignments MDT and FHWA identified were presented to the public and agencies to obtain comments, suggestions, and concerns about their desirability or feasibility and to identify planning issues associated with each corridor. Based on public comment, a build alternative with combined elements of two previous build alternatives was developed (Alternative 5A). Subsequent comments from affected landowners resulted in the

TABLE 2-1
Developing Reasonable Alternatives To Meet Project Purpose

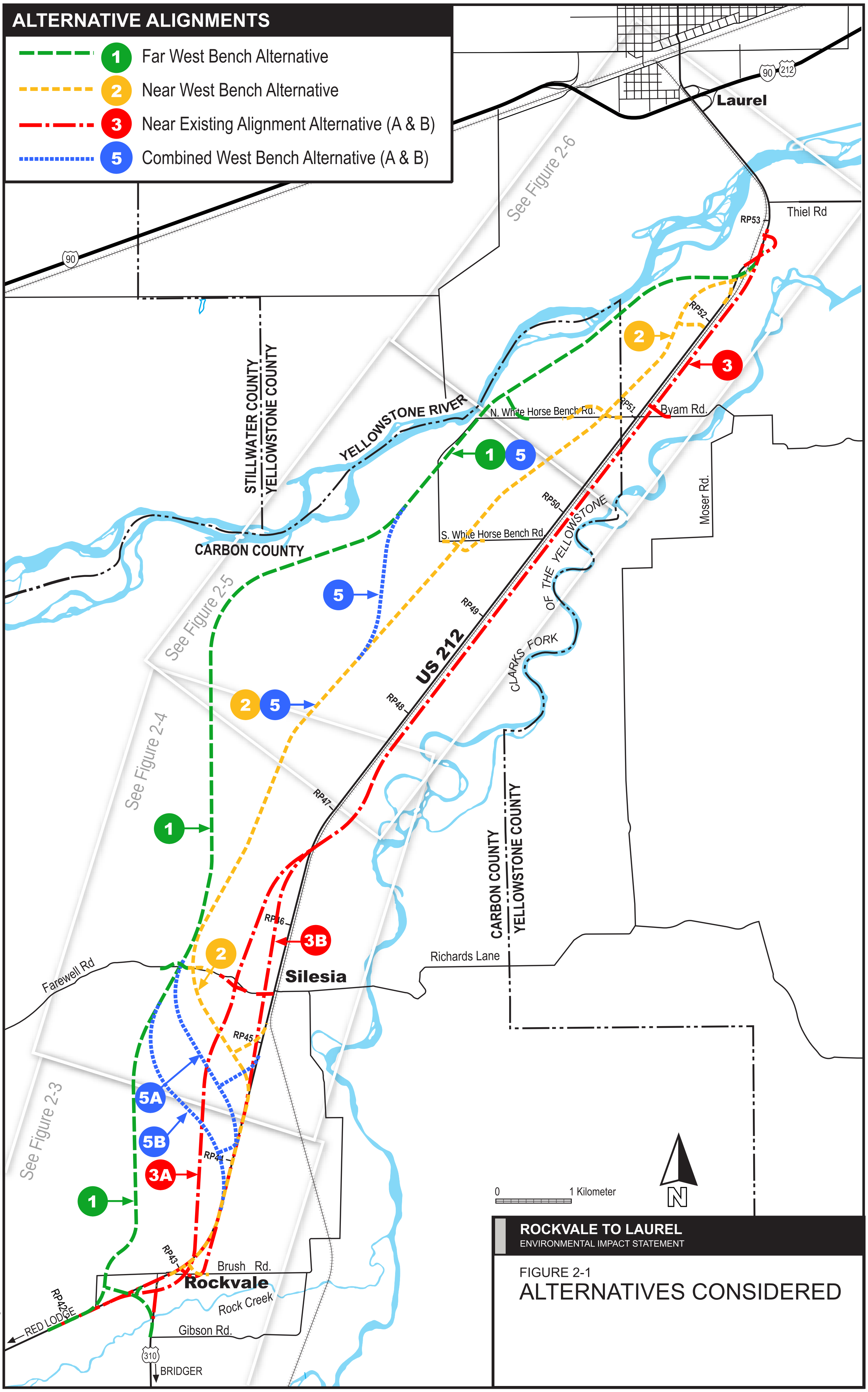
Purpose Statement	Method for Meeting Objective
Improve safety for local and regional traffic needs.	Apply MDT standards and implement access management strategies.
Accommodate capacity needs for local and regional travelers over the next 20 years and beyond using prudent planning principles.	Provide typical section options to meet the capacity need over the next 20 years. (MDT policy requires acceptable operating LOS be achieved in the design year [future year]).
Accommodate the variety of transportation needs along US 212, including local circulation and access for residents with existing access needs.	Apply access management (that is, concentrate and minimize points of access) for the regional traffic corridor and reduce left-turn conflicts for local access roads.
Support mobility of goods and people connecting I-90 with the rural communities of Silesia, Rockvale, Red Lodge, and Bridger, and with destinations in Wyoming.	Continue to connect key destinations for both local and regional traffic flow.

development of a sixth build alternative (Alternative 5B [preferred]), also combining elements of two previous build alternatives. Through this process, the following nine alternatives were identified:

- No Build Alternative
- Transportation System Management and Transportation Demand Management (TSM/TDM) Alternative
- Alternative 1–Far West Bench
- Alternative 2–Near West Bench
- Alternative 3–Near Existing Alignment (two variations)
  - Alternative 3A–Deviates north at RP 43.1 then parallels presently traveled way (PTW)
  - Alternative 3B– Deviates north at RP 44.4 then parallels PTW (closest to existing alignment)
- Alternative 4–East Bench
- Alternative 5–Combined West Bench (two variations)
  - Alternative 5A–Departs US 212 at RP 44.1
  - Alternative 5B (Preferred)–Departs US 212 at RP 43.7

A No Build Alternative, the TSM/TDM Alternative, and build alternatives 1 through 4 (Figures 2-1 through 2-6) were presented for comment to the public, including state and federal agencies. Combinations of the West Bench alternatives, and Alternatives 5A and 5B (Preferred) were presented to the affected neighborhood groups.

With implementation of the No Build Alternative, the existing roadway alignment and two-lane configuration of US 212's PTW would be maintained, but not improved. The No Build Alternative was used as a basis for comparing impacts related to the build alternatives.



ROCKVALE TO LAUREL
ENVIRONMENTAL IMPACT STATEMENT

FIGURE 2-1
ALTERNATIVES CONSIDERED

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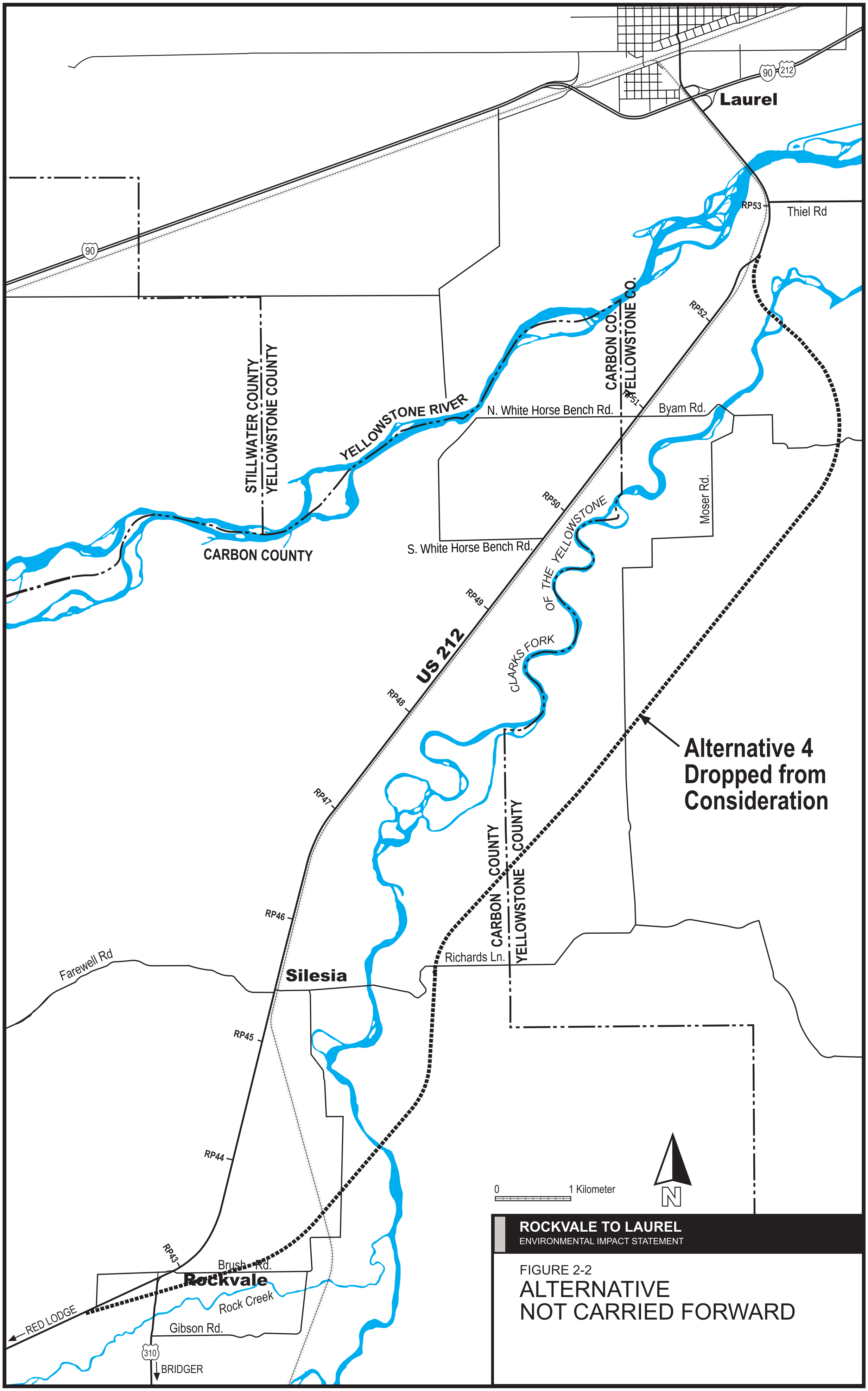

ROCKVALE TO LAUREL
ENVIRONMENTAL IMPACT STATEMENT

FIGURE 2-2
ALTERNATIVE
NOT CARRIED FORWARD

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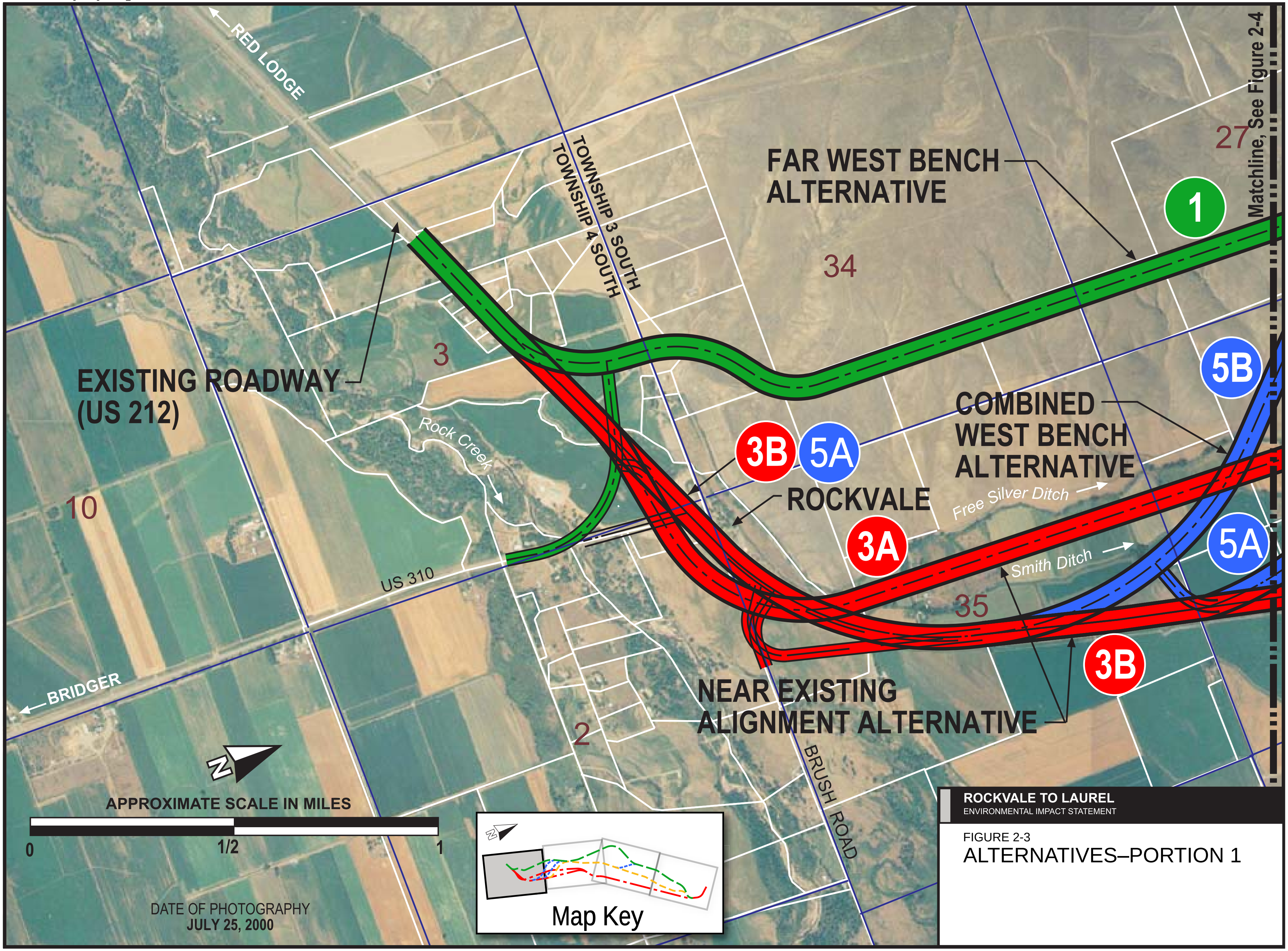

ROCKVALE TO LAUREL
ENVIRONMENTAL IMPACT STATEMENT

FIGURE 2-3
ALTERNATIVES–PORTION 1

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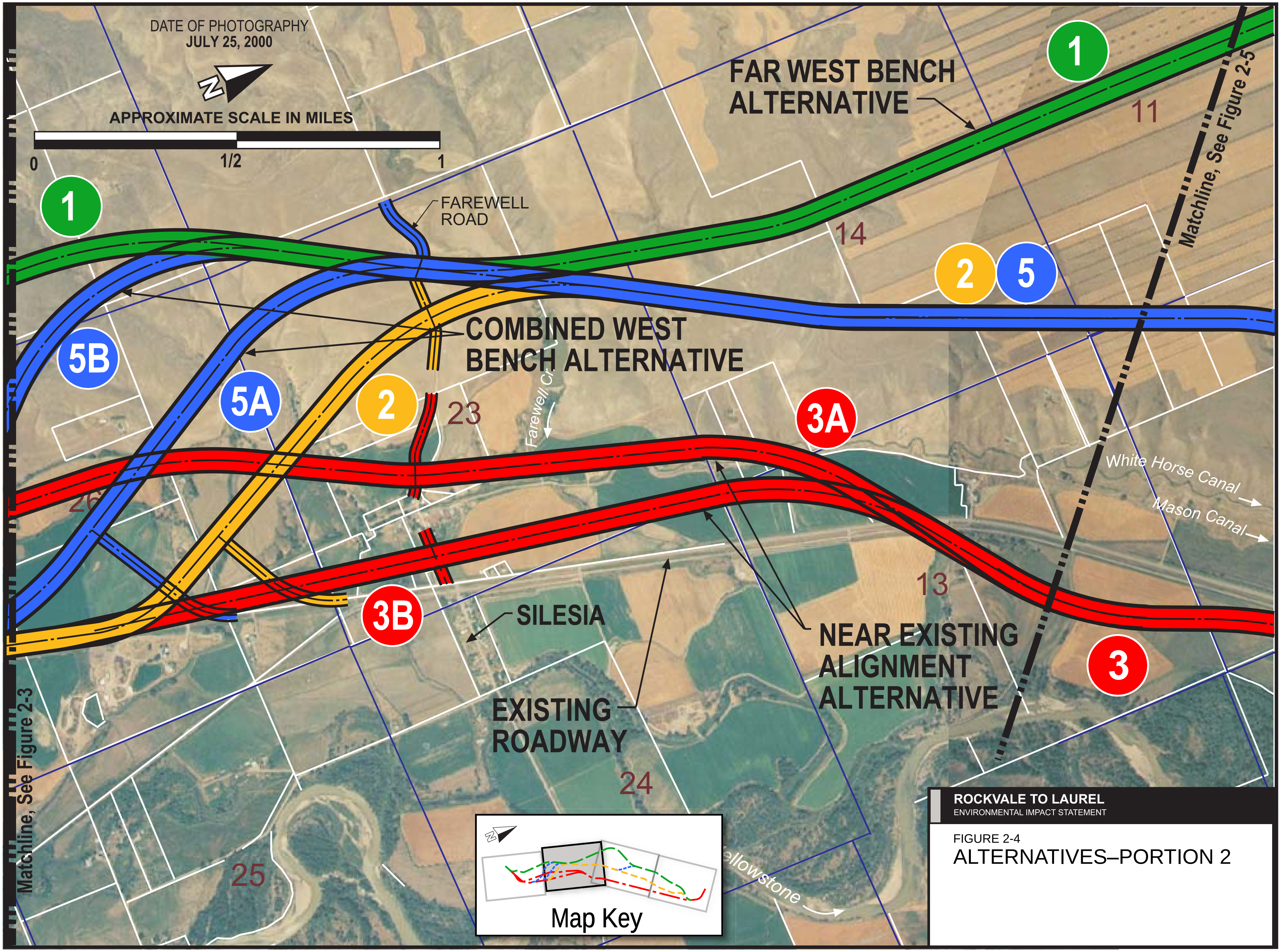

ROCKVALE TO LAUREL
ENVIRONMENTAL IMPACT STATEMENT

FIGURE 2-4
ALTERNATIVES–PORTION 2

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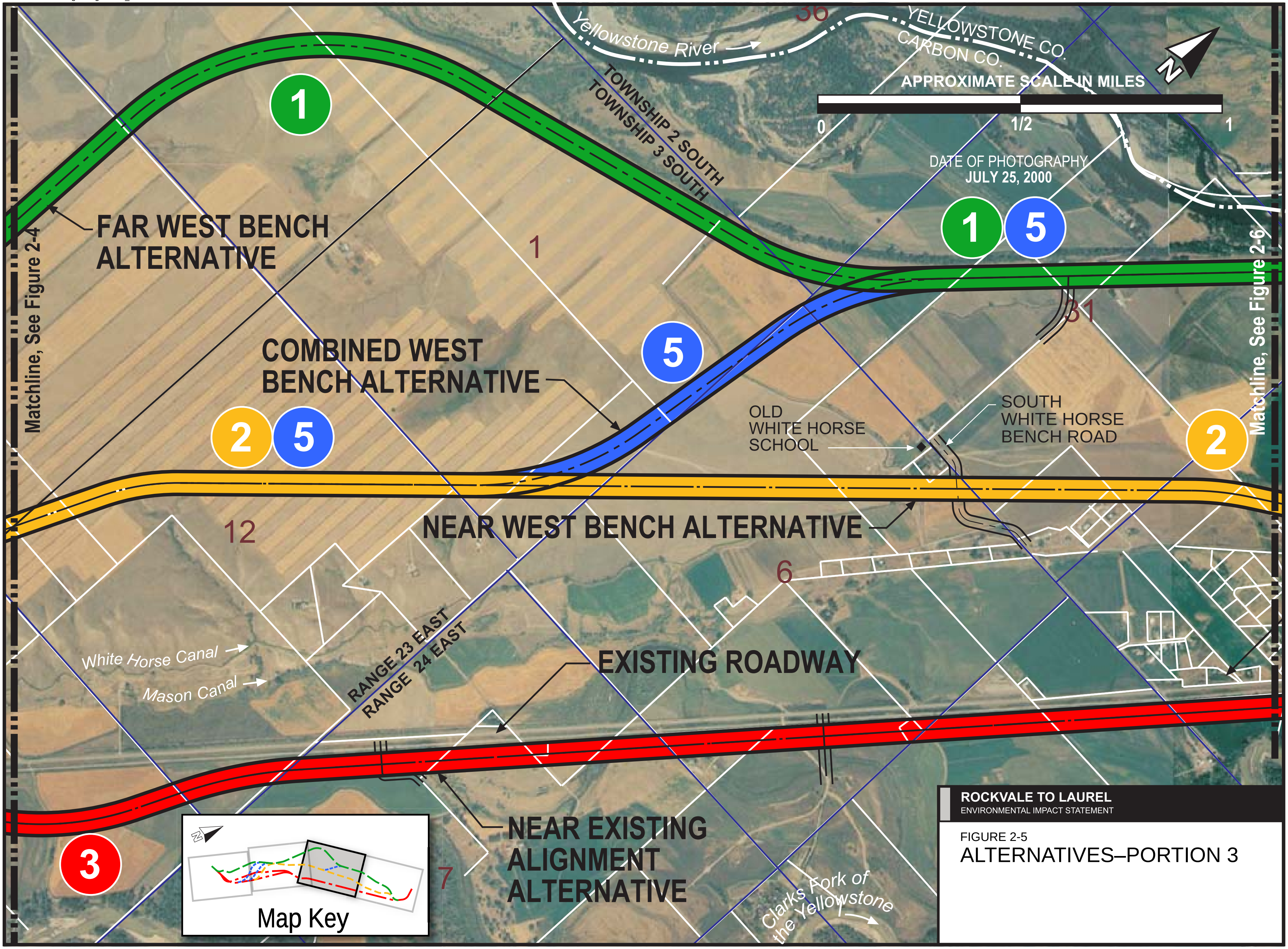

ROCKVALE TO LAUREL
ENVIRONMENTAL IMPACT STATEMENT

FIGURE 2-5
ALTERNATIVES–PORTION 3

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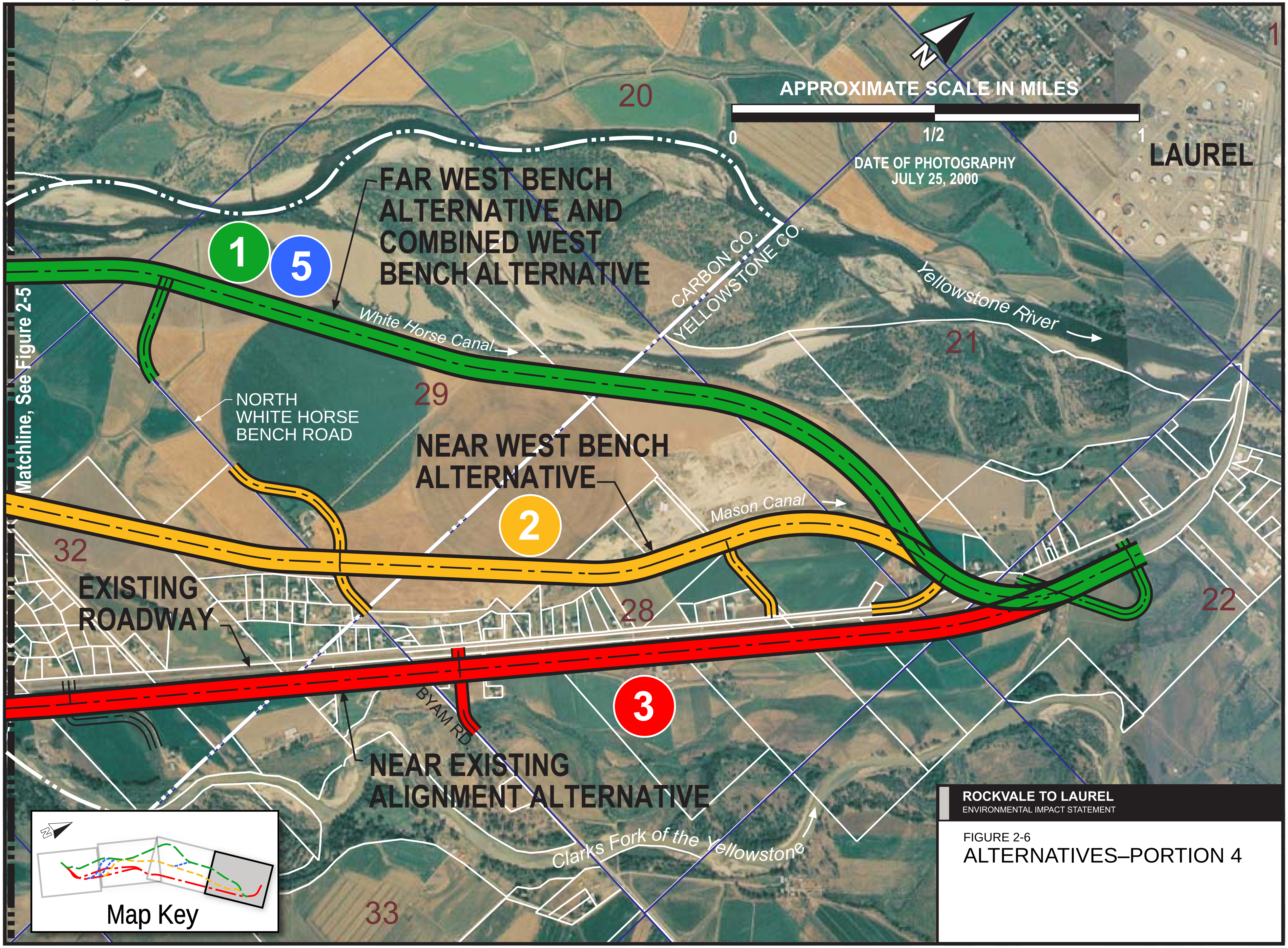

ROCKVALE TO LAUREL
ENVIRONMENTAL IMPACT STATEMENT

FIGURE 2-6
ALTERNATIVES–PORTION 4

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Immediately following the December 12, 2000, public scoping meeting, the TSM/TDM Alternative and Alternative 4—East Bench (Figure 2-2) were discarded from further consideration. These two alternatives did not meet the Purpose and Need of the project. In addition, there was strong concern over the environmental effects of Alternative 4, which was the only alternative that would cross the Clarks Fork Yellowstone River. (For additional information, review *Section 2.5, Alternatives Considered but Eliminated from Detailed Analysis*).

Each of the remaining six build alternatives were further developed to meet MDT standards as appropriate, explore the best lane configurations, widths, and medians in the typical section, and apply access management techniques (including consolidation of access points). The following text describes these evaluations and decisions.

2.2.1 MDT Standards

Standards for proposed projects have been developed by MDT so that taxpayer investment in the transportation system is used to develop safe and efficient highways. Although standards are subject to exceptions or revisions, their use at this stage was necessary to quantify environmental impacts. The following features for Rural Principal Arterials on the National Highway System (MDT, 2004) were applied to the alternatives. (Note that these features are subject to periodic changes.)

- **Level of Service (LOS).** Federal guidelines recommend that the acceptable operating LOS to be achieved in the design year (future year) is LOS B as defined by the *Highway Capacity Manual 2000* (TRB, 2000).
- **Roadway Pavement Width.** For normal travel lanes with a width of 3.6 m (12 ft), inside shoulders (where required) are 1.2-m (4-ft) wide for separated roadways and outside shoulders are 2.4-m (8-ft) wide.
- **Estimated Speed.** A conceptual vertical and horizontal alignment based on a 110 km/h (70 mph) estimated speed through level terrain and a 100 km/h (60 mph) estimated speed through rolling terrain. (Note that these estimated speeds relate to other design parameters such as sight distance; lane and shoulder widths; superelevation rates; grades; and degree of curvature. They do not establish and/or otherwise imply the actual posted speed limits for an alternative.)
- **Grades.** The vertical alignments involving hills and valleys are proposed with a 3 percent maximum grade in level terrain, a 4 percent maximum grade in rolling terrain, and a 0.4 percent minimum grade in curb and gutter areas.
- **Curves.** Horizontal alignments with 505-m (1,657-ft) minimum radius curves in level terrain and 395-m (1,296-ft) minimum radius curves in rolling terrain are intended.
- **Sight Distances.** A minimum stopping sight distance of 180 m (590 ft) for an estimated speed of 110 km/h (70 mph) and 160 m (525 ft) for an estimated speed of 100 km/h (60 mph).

- **Right-of-Way.** A right-of-way or easement recommendation of 40 m (130 ft) on either side of the proposed centerline or to the construction limits plus 3 m (10 ft), whichever is greater.
- **Superelevation.** A maximum conceptual superelevation rate of 8 percent is proposed for those “minimum radius curves” listed previously.
- **Rumble Strips.** Appropriately placed “rumble strips” are proposed for the shoulders to improve driver safety by inducing minor but noticeable vibration with noise while a vehicle’s tires roll over them. Based on MDT standards for NHS routes, the rumble strips are offset from the travel lanes by 15 centimeters (cm) (6 inches [in]) and the rumble strip is 0.3-m (1-ft) wide.

2.2.2 Typical Sections

A typical section is used to show the relative location and dimensions of the features of a roadway and its components, including lanes, shoulders, drainage ditches and medians, and how the slopes outside the roadway will be constructed. In developing the build alternatives, traffic operations on US 212 were evaluated for various typical section configurations based on MTD standards. Two-lane, two-lane with passing lanes, and four-lane sections were analyzed to determine which typical section would meet the capacity needs through 2025. The analysis was performed using methodologies of the *Highway Capacity Manual 2000* (TRB, 2000) and using version 4.1d of the Highway Capacity Software HCS2000. For comparison, a two-lane with passing lanes section was analyzed for the existing alignment and conditions. Table 2-2 shows the results of that analysis and a two-lane with passing lanes typical section on Alternative 5B (preferred). Alternative 5B (preferred) is representative of all proposed build alternatives, all of which would be designed equally to meet MDT design standards (2004) and similar levels of access. Table 2-2 also includes the LOS results for the existing two-lane roadway discussed in detail in *Chapter 1, Purpose and Need*.

TABLE 2-2
Comparison of LOS Analysis for Two-Lane, Two-Lane with Passing Lanes, and Four-Lane Typical Sections of US 212

Alignment	Year	Two-Lane Typical Section LOS	Two-Lane with Passing Lanes Typical Section LOS	Four-Lane Typical Section LOS
Existing (northern portion)	2000	E	C	N/A
Existing (northern portion)	2025	E	D	N/A
Existing (southern portion)	2000	E	C	N/A
Existing (southern portion)	2025	E	C	N/A
Alternative 5B (preferred), which represents all build alternatives	2005	E	C	A
Alternative 5B (preferred), which represents all build alternatives	2025	E	C	A

In accordance with MDT policy for rural two-lane highways, the LOS for new facilities should meet LOS B conditions to the extent practicable. The following factors were considered related to the LOS analysis:

- **Two-Lane and Two-Lane with Passing Lanes Typical Section.** The capacity of the existing two-lane highway is considerably limited by heavy traffic where oncoming traffic reduces the opportunity to use the limited passing zones to pass slower traffic. Adding an additional through lane in each direction overcomes these problems and produces a considerable increase in capacity, LOS, and safety beyond a mere doubling of the two-lane capacity. The analysis demonstrates that a two-lane with passing lanes typical section cannot meet LOS B conditions. More importantly, this typical section does not address safety considerations or conflicts between local and regional traffic flow. Therefore, the two-lane and two-lane with passing lanes typical sections were not developed into build alternatives.
- **Four-Lane Typical Section.** The essential element of all of the build alternatives is the provision of two through lanes in each direction, providing a four-lane facility on a new alignment.
- **Medians.** The typical section for a multilane highway is also determined by the size and type of median. Non-traversable medians might be accommodated in less width than traversable medians.
- **Right-of-Way.** The width of the right-of-way was a concern for many local residents who desired both to improve the safety of the highway through reconstruction and to minimize the amount of right-of-way needed for construction. MDT responded to this request by establishing the minimum right-of-way width and appropriate typical sections for the needs of specific conditions.

A variety of potential typical sections were investigated to determine the most appropriate sections for new alignments, for existing US 212, and for a key connection with US 310. Table 2-3 summarizes the typical sections considered, Figure 2-7 shows the 80-m footprint (260-ft footprint), and Figure 2-8 illustrates each section.

Over the life of a roadway, pavement overlays are added that can cause the width of cut and fill slopes to be wider. MDT’s policy is initially to construct the roadway wide enough to accommodate the planned number of overlays. Each section would be built 0.8 m (2.6 ft) wider than shown in order to accommodate future pavement overlays without effectively decreasing the shoulder width. The analysis of impacts for all build alternatives is based on this wider section. The final determination for additional width will be made in final design.

TABLE 2-3
Typical Sections under Consideration

Name[a]	Width of Typical Section under Consideration	Key Features of the Typical Section
11-meter Median Typical Section US 212[b] (100-ft Section)	30.2 m (100 ft)	• Four 3.6-m(12-ft) travel lanes • Two 2.4-m (8-ft) shoulders • 11-m (36-ft) depressed median including two 1.2-m (4-ft) shoulders
5-meter Median Typical Section US 212 (80-ft Section)	24.2 m (80 ft)	• Four 3.6-m (12-ft) travel lanes • Two 2.4-m (8-ft) shoulders • 5-m (16.4-ft) flush median to include turning movements
No Median Typical Section US 212 (64-ft Section)	19.2 m (64 ft)	• Four 3.6-m (12-ft) travel lanes • Two 2.4-m (8-ft) shoulders • No median or turning lanes
Typical Section Existing US 310 (40-ft Section)	12 m (40 ft)	• Two 3.6-m (12-ft) travel lanes • Two 2.4-m (8-ft) shoulders • No median
Typical Section Existing US 212 (32-ft Section)	9.64 m (32 ft)	• Two 3.6-m (12-ft) travel lanes • Two 1.22-m (4-ft) shoulders • No median

[a]Name of section corresponds with the name on Figure 2-8. Name in parenthesis is the name presented to the public.
[b]Denotes the preferred TYPICAL section for the majority of the new alignment. However, for safety purposes, some geographical conditions or access requirements might require a different typical section.

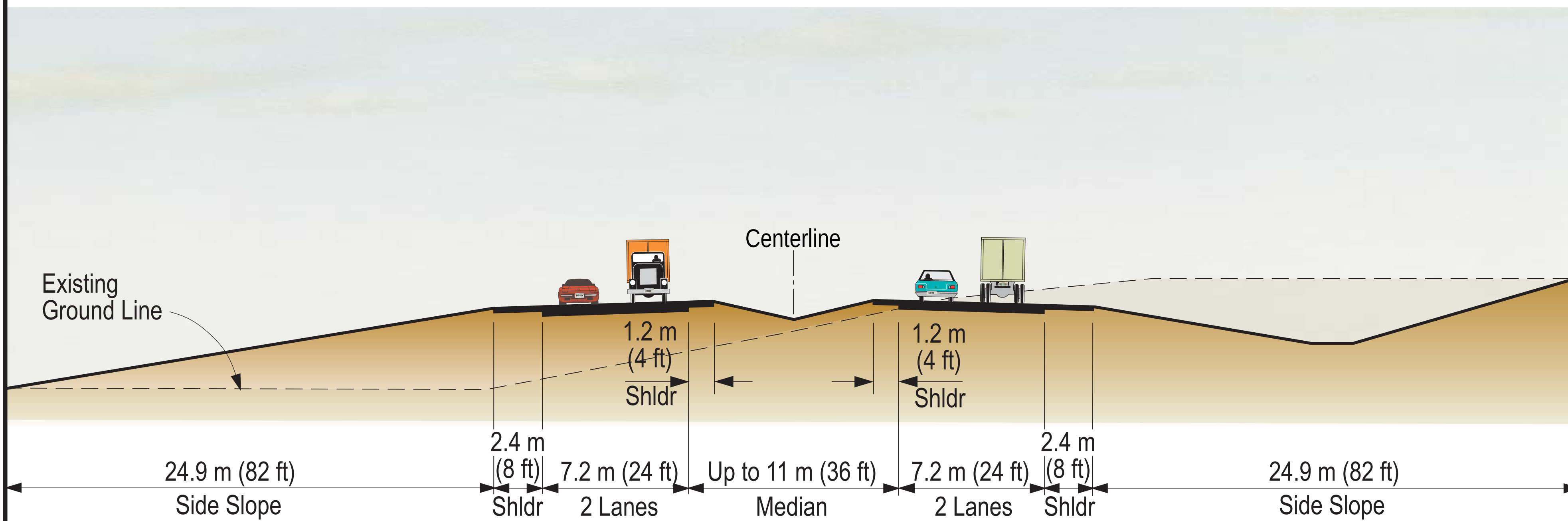
2.2.2.1 11-meter Median Typical Section

The 11-meter Median Typical Section for US 212 (Figure 2-8) was presented to the public as the “100-ft Section.” The median would be depressed, except in intersection and access areas. Left-turn bays would be provided at major intersections. Medians could be raised where snow depths make intersection limits difficult to observe or otherwise clearly delineate. During final design, the intersection at the PTW and the build alternative would be reviewed to check that it would accommodate access and crossings of large farm equipment or trucks. The median might need to be expanded to 30 m (98 ft) to accommodate vehicle storage within the median (see *Appendix A*, Figures A-5a, A-5b, A-5c, A-5d, A-7, A-11, A-13, A-15, A-17, and A-18). The 11-meter Median Typical Section would be preferred on the majority of the build alternatives in rural, open areas because it provides for a safer highway, improved access management, and capacity for both local and regional traffic needs.

80-Meter Footprint (260-Foot Footprint)

An area wide enough to allow for many roadway features that ***could*** be part of the proposed roadway under ***typical*** terrain conditions.

Based on 11-Meter Median
Typical Section (100-Foot Section)



ROCKVALE TO LAUREL
ENVIRONMENTAL IMPACT STATEMENT

FIGURE 2-7
80-METER FOOTPRINT (260-FOOT FOOTPRINT) FOR AN 11-METER MEDIAN TYPICAL SECTION (100-FOOT SECTION)

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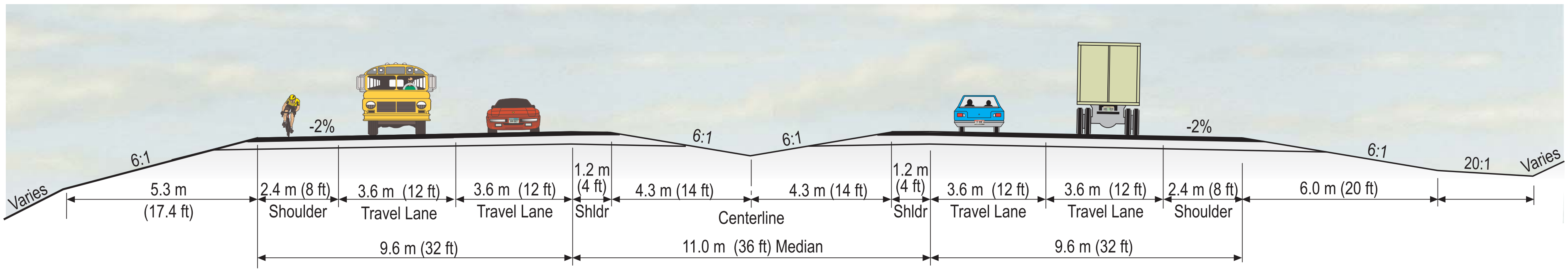
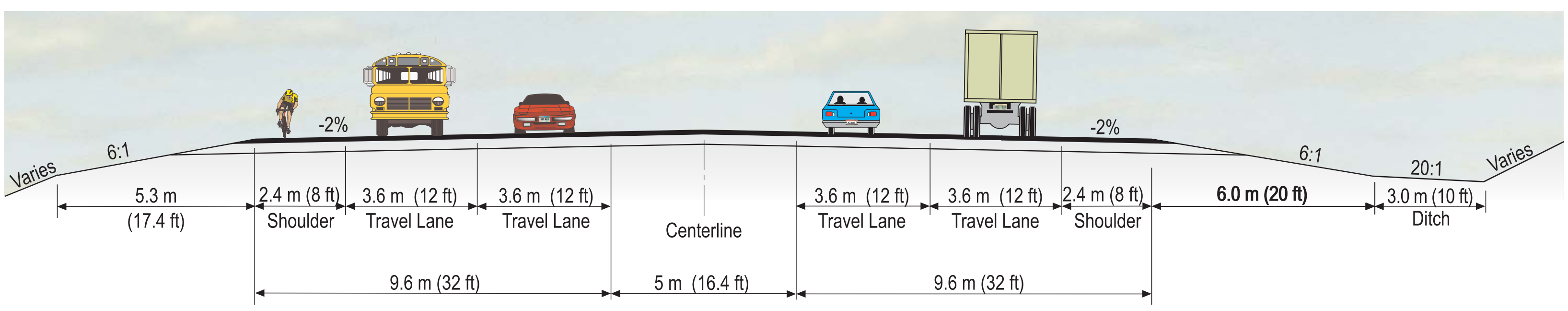
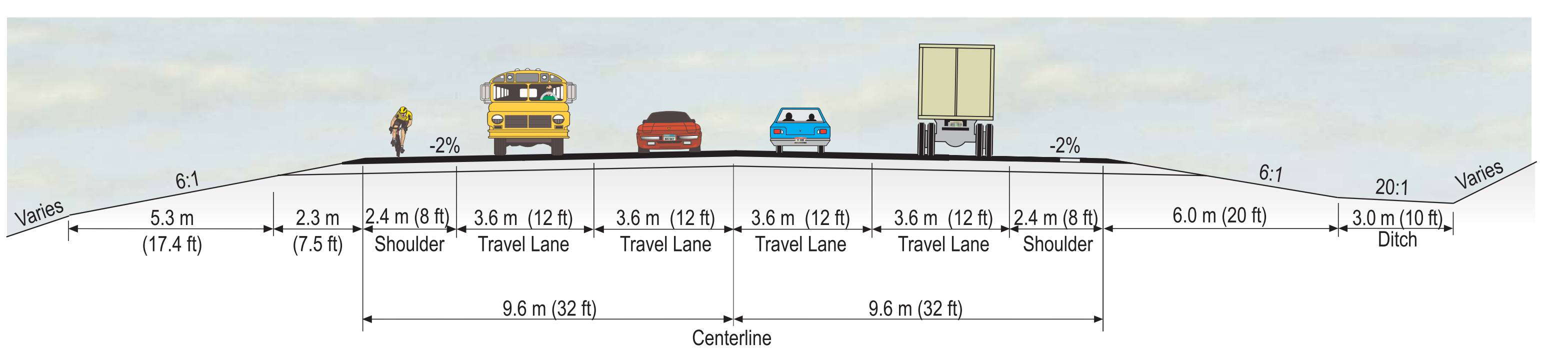


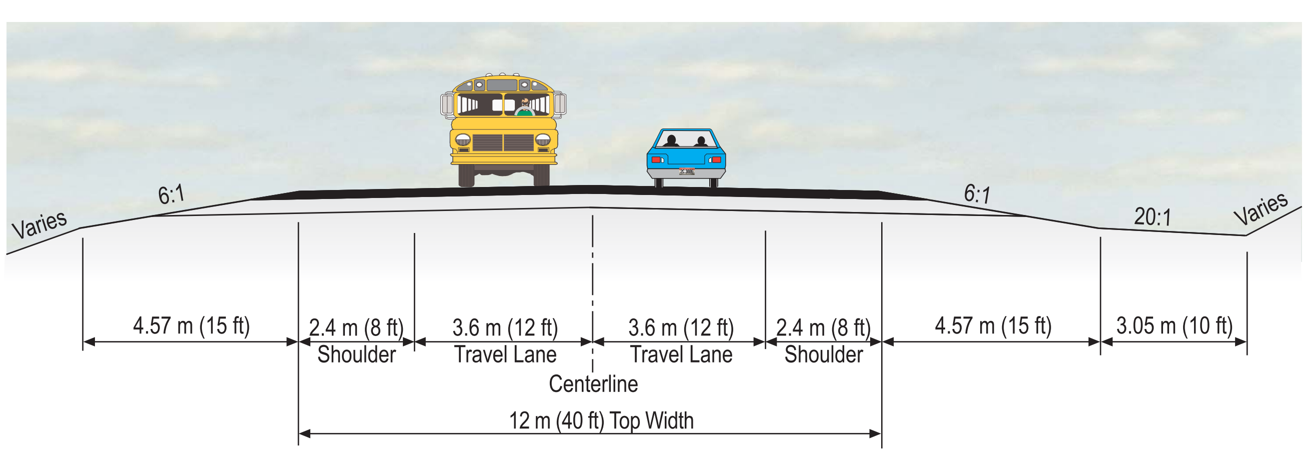
11-METER MEDIAN TYPICAL SECTION US 212



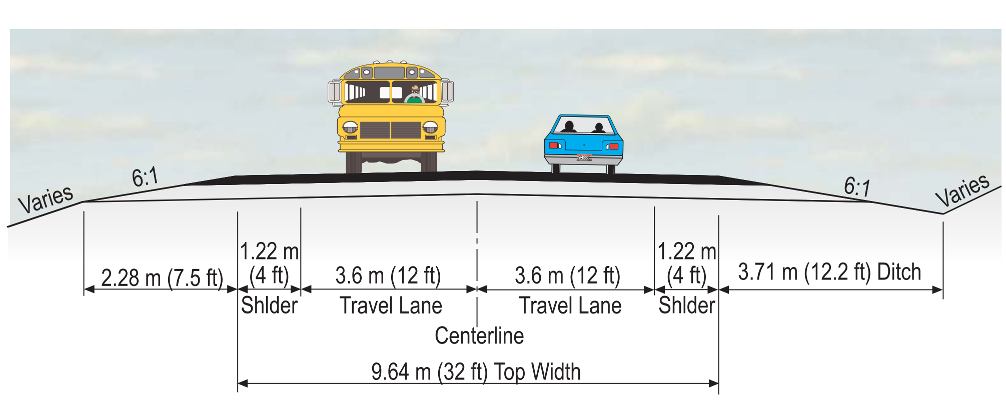
5-METER MEDIAN TYPICAL SECTION US 212



NO MEDIAN TYPICAL SECTION US 212



TYPICAL SECTION EXISTING US 310



TYPICAL SECTION EXISTING US 212

ROCKVALE TO LAUREL
ENVIRONMENTAL IMPACT STATEMENT

FIGURE 2-8
TYPICAL SECTIONS

2.2.2.2 5-meter Median Typical Section

The 5-meter Median Typical Section for US 212 (Figure 2-8) was presented to the public as the “80-ft Section.” The median would be paved flush or raised for turning movement control as needed. This section would characteristically be used at the proposed project’s southerly beginning, northerly end, and areas of deep cut(s) or high fill(s), if necessary. The 5-meter Median Typical Section would also be modified to add turning lanes and curb and gutter sections, as needed.

2.2.2.3 No Median Typical Section

The No Median Typical Section for US 212 (Figure 2-8) was presented to the public as the “64-ft Section.” Because this typical section has no median or turn lane, vehicles that are stopped, waiting to turn left from US 212, present a hazard to other vehicles traveling at highway speeds. Therefore, with the No Median Typical Section, turning lanes would need to be developed for each intersection along US 212. As a result of these safety and turning movement concerns, this typical section was not carried forward.

2.2.2.4 Typical Section for Existing US 310 Alignment

The Typical Section for Existing US 310 (Figure 2-8) was investigated. It is the same as the existing roadway. This section meets current design standards and would adequately support future traffic on US 310. Therefore, this typical section would be preferred for the relocation of US 310 and US 212 at Rockvale (for example, as part of Alternative 1).

2.2.2.5 Typical Section for Existing US 212 Alignment

The Typical Section for Existing US 212 (Figure 2-8) was investigated for the US 212 PTW within the proposed project area. With a new US 212 (one of the build alternatives), traffic volumes on the PTW would substantially decrease, and this typical section would adequately support future traffic. Therefore, this typical section would be preferred for extending the PTW at the new US 212 intersections for the build alternatives.

2.2.2.6 Accommodation of Bicycles

Throughout the public involvement process, the issue of providing facilities to accommodate bicycles was raised. Cyclists preferred a separate bicycle path through the proposed project area. However, concerns about a bicycle path included increased easement widths and the right-of-way required to accommodate a separate bicycle path. Both the public and the agencies requested that new right-of-way be kept to a minimum to avoid impacts to residences, farmlands, and natural habitats. The proposed shoulder width would yield 1.85 m (6 ft) of pathway outside the rumble strips that could be used by bicycles. Therefore, the available width would meet the generally accepted width needed for bicycles on the proposed highway.

2.2.2.7 Safety Characteristics

Each of the typical sections would have different safety characteristics. Converting a two-lane facility to an undivided, four-lane facility (such as the 5-meter Median Typical Section or the No Median Typical Section) could yield various results according to research performed by the FHWA (1999). Depending on traffic volumes, conversion to a four-lane facility could range from reducing the accident rate by 20 percent to slightly increasing the accident rate. The same research also found that converting two-lane rural highways to median-divided, four-lane facilities reduced accident rates by 40 to 60 percent compared to the undivided two-lane highways. This would apply to the 11-meter Median Typical Section, which influenced the decision to select the 11-meter Median Typical Section as the design basis for the build alternatives.

The presence or absence of a median has a substantial impact on roadway operations, safety, and the provision of left-turn access to abutting properties. Medians can be grouped into the following types:

- **Continuous Two-Way Left-Turn Lane (TWLTL).** This is a continuous lane located between opposing traffic streams that provides a refuge area for vehicles to complete left turns from both directions. The average accident rate on roadways with a continuous TWLTL is less than that for undivided roadways. Continuous TWLTLs are effective on roadways in urban and suburban areas with a projected ADT of less than 24,000 vehicles per day, or on collector streets in developed urban and suburban areas where accident patterns cannot be corrected by a raised median.
- **Traversable Medians.** This is a flush or paved area within an undivided highway that does not discourage or prevent vehicles from entering or crossing over it. Traversable medians allow uncontrolled refuge for left-turning vehicles entering or exiting the highway.
- **Nontraversable Medians.** This is a physical barrier in the roadway that separates traffic in opposing directions. Examples of such medians are guard rails, concrete barriers, and landscaped islands with nontraversable curbs. It has been found that roadways with nontraversable medians have lower average accident rates than those with continuous TWLTLs. A nontraversable median is more desirable than a continuous TWLTL on rural multilane roadways or in high accident rate areas where left turns should be limited to improve safety.

Both the 11-meter Median Typical Section and the 5-meter Median Typical Section could accommodate continuous TWLTL, traversable, and nontraversable medians, as well as a combination of median types.

The provision of nontraversable medians has been found to be the most effective treatment for reducing vehicle accidents. In addition, it provides pedestrian refuge and positive guidance to drivers. The application of specific median types within the build alternatives would depend on the locations and goals related to applying the access management techniques described in *Section 2.2.3, Access Management*.

2.2.2.8 Impact Area Used for Evaluating Environmental Consequences

To evaluate environmental consequences, an 80-m (260-ft)-wide impact area (referred to as a footprint) (Figure 2-7) was used for the build alternatives to capture the majority of the construction limits needed. The width is based on the 11-meter Median Typical Section (100-ft Section) described in *Section 2.2.2.1*. A wider footprint was used to include areas of large cuts or fills and their increased impacts.

2.2.3 Access Management

Access management is the systematic control of the location, spacing, design, and operation of driveways, median openings, interchanges, and street connections to a roadway. It also involves roadway design features such as median treatments, auxiliary lanes, and the appropriate spacing of intersections. Access is managed to improve safety, preserve function and mobility, and handle existing and future access in a consistent manner. Access management balances the access needs of individuals with those of the transportation system. The goal is to provide efficient traffic operations while accommodating the access needs of the community.

2.2.3.1 State of Montana Policy

Statutory language in Montana Code Annotated (MCA) 60-5-101, “Policy,” indicates that the state policy is to facilitate the flow of traffic and promote public safety by controlling access to “other federal-aid and state highways as shall be designated by the commission in accordance with the requirements set forth in this chapter.” Language in MCA 60-5-103, “Designation as controlled-access highway,” indicates that “No portion of any interstate highway, throughway or throughway intersection, or other federal-aid or state highway shall be designated as a controlled-access highway unless the commission shall adopt a resolution so designating it.”

2.2.3.2 General Access Management

Access management would be an integral part of the design and operation of the proposed project. Reasonable access would be maintained to existing parcels adjacent to the highway. During the design phase of the proposed project, access management guidelines and an access management plan would be developed after consulting with property owners. At the end of the design phase but before right-of-way acquisition, and pending the approval of Montana’s Transportation Commission, the intent would be to designate the highway as a controlled-access highway and facility.

Future access would be managed in accordance with the access management guidelines and plan developed during the design phase and new direct access might be denied based on criteria established in the guidelines. The preferred 11-meter Median Typical Section, which is proposed for the majority of the project’s length, would limit access possibilities. (An abundance of access point breaks in the median would compromise the safety that the median is intended to provide.) As a condition of permitting, requests for future access might require mitigation of impacts to the operation of the roadway.

Redevelopment of properties would be subject to the appropriate jurisdictional review in addition to conforming to the corridor's management plan. Such redevelopment might require consolidation of existing access points as part of the approval process.

Development patterns in the project area are established. Growth will continue with or without access management. However, the project could change where that growth will occur. Where appropriate, local growth policies would be integrated into the access management plan. Implementation of access management within the project corridor might result in relocating, combining, or eliminating some existing access points if alternate access points can be provided. However, access management would not be used to prohibit the development of private property.

2.3 Alternatives Considered

The No Build Alternative and the build alternatives considered to meet the project's Purpose and Need are described in this section. Each of the build alternatives includes reconstructing US 212 from Rockvale (RP 42.1) to just southerly of Laurel (RP 52.9) on a new route (Figure 2-1). The build alternatives have been developed to improve safety and efficiency of the highway while taking into consideration the constructed and natural environments. Specific conceptual elements for each alternative are identified in this section. Table 2-4 provides descriptive information summarizing each of the alternatives.

2.3.1 No Build Alternative

The No Build Alternative is the current alignment and two-lane configuration of the PTW. Figures 2-1 through 2-6 show this alternative ("Existing Roadway"). The No Build Alternative has been in effect since the nomination of the proposed project. Physical, operational, and safety improvements on the PTW would either not occur or be very limited. However, the PTW would still be maintained.

The PTW does not meet the current geometric standards of MDT for this type of highway (MDT, 2004). The projected growth in traffic volumes would result in increased levels of delay and driver frustration, with an unacceptable LOS E (because drivers would often be unable to pass or maintain safe and acceptable operating speeds).

The No Build Alternative continues to provide for essentially unlimited access. However, as traffic volumes increase, a driver's ability to turn left across opposing traffic into the numerous access points would become more difficult as well as less safe. With increased traffic volumes, the addition of access points, and a potential increase in BNSF Railway train frequencies, it is projected that the accident rates would also increase under this alternative. Therefore, the No Build Alternative does not meet the Purpose and Need of the proposed project.

The No Build Alternative was used as a basis for comparing impacts related to the build alternatives.

TABLE 2-4
Summary Information about Engineering and Other Aspects of the Alternatives Considered[a]

				Alternative 3—Near Existing Alignment		Alternative 5—Combination West Bench	
Comparison Area	**No Build Alternative**	**Alternative 1—Far West Bench**	**Alternative 2—Near West Bench**	**Alternative 3A**	**Alternative 3B**	**Alternative 5A**	**Alternative 5B (Preferred)**
Length of Roadway	16.4 km (10.2 mi)	19.2 km (11.9 mi)	17.7 km (11.0 mi)	17.6 km (10.9 mi)	16.9 km (10.5 mi)	18.2 km (11.3 mi)	18.4 km (11.4 mi)
Relationship to the PTW							
Where it departs from the PTW	No change	RP 42.6	RP 44.5	RP 43.1	RP 44.4	RP 44.1	RP 43.7
Where it rejoins the PTW	No change	RP 52.7	RP 52.4	RP 52.7	RP 46.6	RP 52.7	RP 52.7
Traffic							
Level of Service (LOS)	E	A	A	A	A	A	A
Local traffic	No change	Would carry the least local traffic	Moderate local traffic interaction	Would carry the most local traffic	Would carry the most local traffic	Moderate local traffic interaction	Moderate local traffic interaction
Local Circulation & Access							
General	No change	<-------------------------------------- No general advantage between alternatives --->					
Access requirements	No change	Generally, no new access to properties from the PTW required	Generally, no new access to properties from the PTW required	The PTW would become a frontage road providing access to properties	The PTW would become a frontage road providing access to properties	Generally, no new access to properties from the PTW required	Generally, no new access to properties from the PTW required
Access to Rockvale	No change	Poor	Good	Fair	Good	Good	Good
Access Points (approximate)	103	25	34	38	39	36	35
Safety[b]							
Exposure to conflict points (% of existing)	No change	40%	53%	66%	65%	55%	53%
Exposure to existing US 212 conditions	No change	19%	14%	9%	8%	17%	18%
Railroad crossings[c]	No change	No Change	No Change	Decreased Safety	Decreased Safety	No Change	No Change
Typical Section	No change to existing roadway that is 19.2-m (64-ft) wide	For most of the highway corridor, the 11-meter Median Typical Section (100-ft Section) is recommended. In built up areas such as Rockvale and Laurel, the 5-meter Median Typical Section (80-ft Section) is recommended					
Geometry[d]							
Sharp curves (7-8% superelevation range)	2 curves	5 curves	4 curves	3 curves	1 curve	2 curves	2 curves
Vertical curves at 100 km/h (60 mph) design speed	0 curves	1 curve	1 curve	0 curves	0 curves	1 curve	1 curve
Grades over 3% (100 km/h [60 mph] design speed)	2 grades	8 grades	3 grades	0 grades	0 grades	6 grades	7 grades

TABLE 2-4
Summary Information about Engineering and Other Aspects of the Alternatives Considered[a]

Comparison Area	No Build Alternative	Alternative 1—Far West Bench	Alternative 2—Near West Bench	Alternative 3—Near Existing Alignment		Alternative 5—Combination West Bench	
				Alternative 3A	Alternative 3B	Alternative 5A	Alternative 5B (Preferred)
Long steep grades (16 km/h [10 mph] speed reduction)	0 grades	3 grades	0 grades	0 grades	0 grades	1 grade	3 grades
Grade separations	No change	4	2	4	4	4	4
Geotechnical Considerations[e]							
Earthwork required	No change	1st (Most)	3rd (~84% of Alt. 1)	5th (45% of Alt. 1)	5th (45% of Alt. 1)	4th (~75% of Alt. 1)	2nd (~95% of Alt. 1)
Length of concerns	N/A	33.2 km (20.6 mi)	11.6 km (7.2 mi)	7.5 km (4.7 mi)	7.5 km (4.7 mi)	18.1 km (11.2 mi)	18.1 km (11.2 mi)
Intersections							
With roads	No change	5	6	4	3	6	6
With railroad crossing	No change	0	0	4	4	0	0
Crossing Requirements							
Overpass over railroad tracks (bridge)	No change	2	2	2	2	2	2
Overpass over PTW (bridge)	No change	2	0	2	2	2	2
Bridge over water body	No change	1 (Rock Creek)	0	0	0	0	0
Culvert over water body	No change	4	7	7	4	6	6
Railroad and Utility Conflicts	None	1 railroad crossing	1 railroad crossing, gas line	1 railroad crossing, substation displaced	1 railroad crossing, substation displaced	1 railroad crossing, gas line	1 railroad crossing, gas line

[a] Information based on conceptual design and modifications may be necessary as the design process continues.
[b] Less exposure to approaches (conflict points) and railroad crossings is considered more desirable, as more exposure indicates a higher potential for accidents.
[c] Pertains to both the existing US 212 and the alternative.
[d] Sharp horizontal curves, lower design speed vertical curves, steep grades, and long steep grades that reduce truck speed significantly are less desirable.
[e] Greater length equates to more geotechnical concerns on the specific alternative.

2.3.2 Build Alternatives

Improvements could be made to the PTW. However, the PTW is located between an existing railroad right-of-way on one side and residential and agricultural properties on the other. It physically cannot be expanded to a four-lane highway on its existing alignment without severe right-of-way and railroad impacts. Expansion to accommodate a four-lane highway toward the railroad would require the railroad to be relocated in order to maintain minimum right-of-way width for the railroad, and would be cost-prohibitive. Expansion the opposite direction toward the residential and agricultural properties would require additional right-of-way that would affect 47 residential and one business properties, including 14 residential relocations. To meet the stated access management goals, a frontage road would have to be provided for properties with direct access to the PTW. The additional right-of-way needed for a frontage road would further impact the 47 residential and one business properties previously mentioned, and increase the residential relocations by 11, resulting in 25 total residential relocations. Therefore, the PTW cannot feasibly achieve the desired LOS B and safety considerations to accommodate local and regional traffic objectives.

The proposed build alternatives (Figures 2-3 through 2-6) would reconstruct US 212 from Rockvale (RP 42.1) to just southerly of Laurel (RP 52.9) on a new alignment, including substantial improvements to the existing junction of US 212 and US 310 at Rockvale. Each of the proposed build alternatives would deviate from the PTW's alignment for some length. In these locations, the existing roadway would remain in place, providing local access and functioning as a local collector road. MDT would continue maintaining the PTW.

Proposed typical sections are discussed within the individual alternative descriptions. To provide the highest degree of safety, acceptable LOS, and compatibility with access management principles, the preferred typical section for most of the proposed project would be a divided highway with a depressed median and four lanes, each 3.6-m (12-ft) wide (11-meter Median). There would also be a preference for 2.4-m (8-ft)-wide outside shoulders, and an 11-m (36-ft)-wide median (Figure 2-8). The typical right-of-way would be 80-m (260-ft) wide. The discussion of build alternatives in this Draft EIS is based on the preferred typical section (11-meter Median).

Each build alternative, developed as a four-lane divided highway, would operate at LOS A in the design year 2025. In fact, the service life of the project is anticipated to exceed the 25-year design life based on the traffic projections.

The build alternatives would facilitate access to intersecting existing public and essential farmland access roads. As part of access management, private farmland access might be provided via frontage roads, which would then be controlled as access to the relocated US 212.

Figures 2-1, 2-3, 2-4, 2-5, and 2-6 show the alignments for the six build alternatives analyzed in this Draft EIS. The alternatives are:

- Alternative 1—Far West Bench
- Alternative 2—Near West Bench

- Alternative 3–Near Existing Alignment (two variations)
  - Alternative 3A—Deviates north at RP 43.1 then parallels PTW
  - Alternative 3B—Deviates north at RP 44.4 then parallels PTW (closest to existing alignment)
- Alternative 5—Combined West Bench (two variations)
  - Alternative 5A—Departs US 212 at RP 44.1
  - Alternative 5B (Preferred) —Departs US 212 at RP 43.7

Alternative 4—East Bench was dropped from detailed analysis (see *Section 2.5.2, Alternative 4—East Bench*).

In the sections that follow, the route of each alternative is described along with information about:

- Geotechnical Considerations
- Potential Structure Requirements
- Access
- Intersections

2.3.2.1 Alternative 1—Far West Bench

The Alternative 1 alignment would:

- Depart the PTW nearly 1.2 km (0.75 mi) west-southwesterly from Rockvale.
- Curve onto a northerly bearing and pass through irrigated cropland westerly of Rockvale, ascending the hills northerly from there.
- Continue northerly over rolling rangelands.
- Intersect the Farewell Road westerly of Silesia.
- Cross Farewell Creek upstream from a small reservoir.
- Proceed northerly through rangelands and wheat fields to the bluffs along the Yellowstone Valley's southerly side.
- Turn northeasterly to follow those bluffs through more wheat fields and irrigated croplands onto the White Horse Bench.
- Intersect White Horse Bench Road north of the old White Horse School.
- Continue northeasterly through irrigated croplands on the Yellowstone Valley's southerly bluffs to within approximately 0.5 km (0.3 mi) northerly of the Krug (Gravel) Pit.
- Turn easterly, crossing both the PTW near RP 52.4 and the railroad tracks.
- Turn northerly through more croplands, joining the PTW at approximately RP 52.7.

Geotechnical Considerations. The proposed route of Alternative 1 would require the most earthwork of the build alternatives. There would be cut depths down to 13 m (43 ft) and fill heights up to 18 m (59 ft). Soil conditions and appropriate measures to address erosion, water seeps, and foundation issues will be determined during final design.

Several gullies have eroded into the edge of the terrace along the Yellowstone River near the proposed alignment of Alternative 1. Some of these gullies appear to contain springs and saturated soils. It has been hypothesized that these springs feed wetlands below the bluff in the Yellowstone River floodplain. Embankment fills would be required where the alignment crosses these gullies. The design and construction of adequate embankments in these steep gullies would be a challenge and would require care not to upset the hydrologic regime or impede spring flow.

Potential Structure Requirements. Within the corridor, conceptual design completed to facilitate impact assessment suggests that five bridges and four large culverts would be required. The Rock Creek Bridge would be designed according to MDT design standards (2004) to allow for fish passage and to keep the floodplain water level from rising greater than 0.15 m (0.5 ft). Constructing Alternative 1 would involve a permanent closure of the existing railroad underpass, which would be replaced by a railroad overpass. Table 2-5 presents a breakdown of the potential structure requirements.

TABLE 2-5
Potential Structure Requirements for Alternative 1—Far West Bench*

Location (RP on PTW)	Location (Description)	Crossing Type	Approximate Structure Length Required
42.5 (US 310)	Rock Creek	Natural drainage	43-m (140-ft) bridge
42.4	Free Silver Ditch	Irrigation crossing	Large culvert
45.7	Farewell Creek	Natural drainage	Large culvert
50.2	White Horse Canal	Irrigation crossing	Large culvert
52.3	Mason Canal	Irrigation crossing	Large culvert
52.4	PTW Interchange	Overpass	Two 79-m (259-ft) bridges
52.5	Railroad Tracks	Overpass	Two 112-m (367-ft) bridges

*Information based on conceptual design and modifications may be necessary as the design process continues.

Access. Drivers currently access the properties affected by Alternatives 1, 2, 5A, and 5B (preferred) from public roads. Those public roads would have new intersection crossings with the proposed alignments of US 212, and new access to individual properties from US 212 would generally not be required. Access to most local properties could be made from the PTW, which would remain in place. Each build alternative would require approximately five field access points. These new access points would be in addition to crossing intersections at existing public roads. Many of the necessary access points would allow a landowner to get to a part of a severed agricultural field. Good access management concepts

dictate some access points from opposing directions could be right-turn-only access reached through U-turn maneuvers at designated median openings/intersections.

Intersections. The five proposed intersections on Alternative 1 would be stop-sign controlled.

- **US 212/310 Junction.** The existing junction of US 212 and US 310 at Rockvale would be moved westerly (*Appendix A*, Figure A-1), requiring the realignment of both routes. Free-right turns, deceleration lanes, and left-turn lanes are proposed. An 11-m (36-ft)-wide median at the intersection location is proposed.
- **US 212/Farewell Road Intersection.** An intersection would be required where Alternative 1 intersects Farewell Road (see *Appendix A*, Figure A-2). A median width of 11 m (36 ft) and left-turn lanes for both directions are proposed. Farewell Road would be moved at this location to obtain a perpendicular and through intersection with adequate vehicle storage.
- **US 212/White Horse Bench Road Intersection.** An intersection would be required where Alternative 1 intersects the north-south portion of White Horse Bench Road (see *Appendix A*, Figure A-3). A median width of 11 m (36 ft) and a left-turn lane for the south direction only is proposed. This would be a through intersection. However, the west intersection leg would be private access. White Horse Bench Road would be moved at this location to provide a perpendicular intersection with adequate vehicle storage space.
- **US 212/North White Horse Bench Road Intersection.** An intersection would be required where Alternatives 1, 5A, and 5B (preferred) intersect the North White Horse Bench Road (see *Appendix A*, Figure A-4). This would be a tee intersection. North White Horse Bench Road would be moved at this location to provide a perpendicular intersection with adequate storage.
- **US 212/PTW Intersection.** An intersection would be required south of the existing railroad underpass near RP 52.0 on the PTW. This intersection would connect the PTW with the new Alternative 1. Several options are being considered for this intersection, including:
  - **Option 1.** An at-grade intersection on the south side of Alternatives 1 and 5 (see *Appendix A*, Figure A-5a).
  - **Options 2 and 4.** Two grade-separated, diamond-type interchanges (see *Appendix A*, Figures A-5b and A-5d).
  - **Option 3.** A grade-separated, trumpet-type interchange (see *Appendix A*, Figure A-5c). Grade-separated interchanges are being considered because of the high fills proposed for US 212 at this location as well as the existing and estimated future traffic volumes.

  A preferred intersection/interchange alternative has not been identified at this time.

2.3.2.2 Alternative 2—Near West Bench

The Alternative 2 alignment would:

- Follow the PTW from Rockvale northerly to approximately RP 44.5.
- Leave the PTW, turning northwesterly through pastureland.
- Intersect Farewell Road approximately 1.1 km (0.7 mi) westerly of Silesia.
- Cross Farewell Creek upstream from a small reservoir.
- Proceed northeasterly through rangelands and wheat fields.
- Intersect the South White Horse Bench Road westerly of the PTW.
- Continue northeasterly through irrigated croplands.
- Intersect the North White Horse Bench Road westerly of the PTW.
- Remain heading northeasterly into Yellowstone County
- Cross the Mason Canal southerly of the Krug (Gravel) Pit.
- Turn northerly to generally parallel the Mason Canal's southeasterly (right) bank through irrigated croplands.
- Turn east-northeasterly onto the Alternative 1 alignment, crossing the PTW near RP 52.4.
- Remain on the same proposed alignment as Alternative 1.

Geotechnical Considerations. Alternative 2 ranks third of the build alternatives in the amount of earthwork that would be required (approximately 84 percent of the amount required for Alternative 1). There would be cut depths down to 9 m (30 ft) and fill heights up to 21 m (69 ft). Soil conditions and appropriate measures to address erosion, water seeps, and foundation issues will be determined during final design.

Potential Structure Requirements. Within the corridor, conceptual design completed to facilitate impact assessment suggests two bridges and seven large culverts would be required for Alternative 2. Constructing this alternative would involve a permanent closure of the existing railroad underpass, which would be replaced by a railroad overpass. Table 2-6 presents a breakdown of the potential structure requirements.

TABLE 2-6
Potential Structure Requirements for Alternative 2—Near West Bench*

Location (RP on PTW)	Location (Description)	Crossing Type	Approximate Structure Length Required
44.8	Smith Ditch	Irrigation crossing	Large culvert
45.0	Free Silver Ditch	Irrigation crossing	Large culvert
45.1	Free Silver Ditch	Irrigation crossing	Large culvert
45.1	Free Silver Ditch	Irrigation crossing	Large culvert
45.7	Farewell Creek	Natural drainage	Large culvert
49.2	White Horse Canal	Irrigation crossing	Large culvert
51.5	Mason Canal	Irrigation crossing	Large culvert
52.5	Railroad Tracks	Overpass	Two 112-m (367-ft) bridges

*Information based on conceptual design and modifications may be necessary as the design process continues.

Access. Access issues would be the same as those described for Alternative 1.

Intersections. The six proposed intersections on Alternative 2 would be stop-sign controlled.

- **US 212/310 Junction.** The existing junction of US 212 and US 310 at Rockvale would be reconstructed to better accommodate the existing and expected traffic, as well as turning trucks (see *Appendix A*, Figure A-6). The addition of raised medians would provide safety within Rockvale. A 5-m (16-ft)-wide median would provide room for offset turning lanes within the median. Two existing approaches would be eliminated, and Brush Road would be moved at this location to provide a through and perpendicular intersection. An access road among the commercial properties within Rockvale would be improved to provide access that would be lost by eliminating existing approaches.
- **US 212/PTW Intersection.** An intersection with the PTW would be required south of Silesia close to the point at which Alternative 2 leaves the PTW (see *Appendix A*, Figure A-7). The PTW would be moved at this location to obtain a perpendicular intersection in a straight section of the new US 212. A free-right-turn lane from the new US 212 to the PTW is proposed. A 30-m (100-ft)-wide median through the intersection area would provide for safe truck storage within the median and for U-turn movements.
- **US 212/Farewell Road Intersection.** An intersection would be required where Alternative 2 intersects Farewell Road (see *Appendix A*, Figure A-8). A median width of 11 m (36 ft) and left-turn lanes for both directions are proposed. Farewell Road would be moved at this location to obtain a perpendicular and through intersection with adequate vehicle storage.
- **US 212/South White Horse Bench Road Intersection.** An intersection would be required where Alternative 2 intersects South White Horse Bench Road (see *Appendix A*, Figure A-9). A median width of 11 m (36 ft) and left-turn lanes for both directions is

proposed. South White Horse Bench Road would be moved at this location to obtain a perpendicular and through intersection with adequate vehicle storage.

- **US 212/North White Horse Bench Road Intersection.** An intersection would be required where Alternative 2 intersects North White Horse Bench Road (see *Appendix A*, Figure A-10). A median width of 11 m (36 ft) and left-turn lanes for both directions are proposed. North White Horse Bench Road would be moved at this location to obtain a perpendicular and through intersection with adequate vehicle storage while avoiding taking homes.
- **US 212/PTW Intersection.** An intersection with the PTW would be required south of the proposed railroad overpass at approximately RP 52.0 on the PTW (see *Appendix A*, Figure A-11). It is likely that this intersection would be used by traffic accessing the PTW, which would remain in place. Some reconstruction of the PTW would be required, and the connection would use part of an existing private access road that is currently a haul road to the Krug (Gravel) Pit. Left-turn lanes would be provided for both directions.

An interchange is not proposed for Alternative 2.

2.3.2.3 Alternative 3—Near Existing Alignment

Alternative 3 has two potential alignments, Alternatives 3A and 3B, that are discussed in the following sections.

Alternative 3A. The Alternative 3A alignment would:

- Leave the PTW approximately 0.4 km (0.25 mi) southwesterly from its present junction with US 310.
- Proceed east-northeasterly through irrigated croplands, intersecting US 310 southerly of Rockvale near RP 42.7.
- Turn northerly to cross the PTW close to RP 43.1.
- Cross the Smith Ditch.
- Continue northerly through irrigated croplands and pasturelands between the Smith Ditch and the Free Silver Ditch.
- Bend slightly easterly and intersect Farewell Road west of Silesia.
- Return to a more northerly bearing, roughly paralleling the PTW just over 0.5 km (0.3 mi) easterly.
- Bend northeasterly to cross the White Horse Canal.
- Traverse the PTW (near RP 46.6), the railroad tracks, and the Mason Canal.
- Turn northerly, paralleling the southeasterly right-of-way of the railroad.

- Match the proposed alignments of both Alternatives 1 and 2 soon after crossing the railroad tracks.

- Join the PTW at approximately RP 52.7.

Geotechnical Considerations. Alternative 3A (and Alternative 3B) would require the least amount of earthwork (approximately 45 percent of the amount required for Alternative 1). The part of Alternative 3A that would be parallel with and between the Free Silver and Smith Ditches would be subject to seepages from those irrigation systems. Soil conditions and appropriate measures to address erosion, water seeps, and foundation issues will be determined during final design. Where the proposed alignment would adjoin the southeasterly right-of-way of the railroad tracks, it is likely that culverts would be necessary to maintain the southeasterly flow of irrigation wastewater across low-lying areas and to avoid saturating the embankment. The existing railroad underpass might require improvement to safely tie in local traffic to Alternative 3A without an at-grade railroad crossing. Additional impacts from controlling groundwater for such proposed improvements would also be introduced.

Potential Structure Requirements. Within the corridor, conceptual design completed to facilitate impact assessment suggests four bridges and seven large culverts would be required for Alternative 3A. Table 2-7 presents a breakdown of the potential structure requirements.

TABLE 2-7
Potential Structure Requirements for Alternative 3A—Near Existing Alignment*

Location (RP on PTW)	Location (Description)	Crossing Type	Approximate Structure Length Required
42.5	Smith Ditch	Irrigation crossing	Large culvert
43.2	Smith Ditch	Irrigation crossing	Large culvert
43.2	Free Silver Ditch	Irrigation encroachment	Large culvert
44.7	Free Silver Ditch	Irrigation encroachment	Large culvert
45.0	Free Silver Ditch	Irrigation encroachment	Large culvert
45.7	Farewell Creek	Natural drainage	Large culvert
46.3	White Horse Canal	Irrigation crossing	Large culvert
46.6	US 212 / Railroad Tracks	Overpass	Two 180-m (590-ft) bridges
52.7	US 212	Overpass	Two 87-m (286-ft) bridges

*Information based on conceptual design and modifications may be necessary as the design process continues.

Access. The north 9.5 km (5.9 mi) of Alternatives 3A and 3B would be located northeasterly and southeasterly of, and parallel to, the railroad tracks. This would effectively limit access from the west to public roads that would continue to cross the railroad tracks. The PTW would become a frontage road serving other access points from the west.

An examination of the number and location of existing access points east of the railroad tracks suggests that it would be reasonable to provide access to the new US 212 alignment at most existing access locations. Only two existing locations have spacing of less than 0.4 km (0.25 mi), and these could be eliminated in final planning. The number of access points from the east would be approximately four per mile. This would be acceptable given that the access points generally serve single homesteads. It would be expected, however, that future development to greater numbers of homes or businesses would prompt the need for the development of local roadways that would ultimately reduce the number of access points.

Both Alternatives 3A and 3B would need existing access consolidated from the beginning of their alignment to southwesterly of RP 46.5 on the PTW. Approximately eight access locations are present on each side of the PTW in the southwesterly 3.2 km (2.0 mi) on the proposed project's portion of US 212. Therefore, it would be necessary to realign and/or eliminate several access connections and to determine if a frontage road would be desirable.

Intersections. The four proposed intersections with roads and the four proposed intersections with railroad crossings on Alternative 3A would be stop-sign controlled.

- **US 212/310 Junction.** A junction of US 212 and US 310 at Rockvale would be constructed south of the existing intersection (see *Appendix A*, Figure A-12). This intersection would have free-right-turn ramps and left-turn lanes. A median width of 5 m (16 ft) is proposed. The PTW would act as a frontage road in Rockvale, with connections to the new US 212 at both ends.
- **US 212/PTW South Intersection.** An intersection with the PTW would be required immediately south and east of Rockvale (see *Appendix A*, Figure A-13). A median width of 5 m (16 ft) is proposed at the intersection location. This intersection would involve moving the PTW to the east to provide a perpendicular intersection with adequate vehicle storage. This intersection would also act as an east Rockvale connection.
- **US 212/Farewell Road Intersection.** An intersection would be required where Alternative 3A intersects Farewell Road (see *Appendix A*, Figure A-14). A median width of 11 m (36 ft) and left-turn lanes for both directions are proposed. Farewell Road would be moved at this location to obtain a perpendicular and through intersection with adequate vehicle storage.
- **Railroad Crossings.** Four railroad crossings would connect the new US 212 with the PTW between Silesia and Laurel (see *Appendix A*, Figures A-19 through A-22). These crossings would be spaced approximately 1 mi (1.6 km) apart. They would be located at RP 47.9, RP 48.9, RP 50.2 (across from Henry's Road), and RP 51.2 (at the North White Horse Bench Road/Byam Road crossing). These crossings would replace the existing railroad crossings. A median width of 11 m (36 ft) for intersections is proposed. Left-turn lanes would be provided for northbound traffic at all four crossings and for southbound traffic at the RP 48.9 crossing and the Byam Road crossing. Byam Road would be realigned at this crossing to obtain a perpendicular intersection with adequate vehicle storage and to avoid taking homes.

- **US 212/PTW North Intersection.** An intersection with the PTW would be required north of the existing railroad underpass at Wilkins Road (see *Appendix A*, Figure A-15). It is likely that this intersection would be used by traffic accessing the PTW, which would remain in place. The intersection would involve moving the PTW and constructing an overpass on Alternative 3 (either 3A or 3B) to obtain a perpendicular intersection with adequate vehicle storage. A median width of 5 m (16 ft), left-turn lanes for both directions, and a right-turn deceleration lane for southbound traffic at the Wilkins Road turnoff are proposed. A right-turn ramp and left-turn lanes would provide entrance and exit onto the new US 212 for local traffic.

An interchange is not proposed for this alternative.

Alternative 3B. The Alternative 3B alignment would:

- Remain on the PTW to approximately RP 44.4.
- Diverge from the PTW and run northerly through pasturelands.
- Cross the Farewell Road immediately west of Silesia.
- Continue through pasturelands and irrigated croplands until it joins Alternative 3A, which would occur southwesterly of where Alternative 3A crosses the PTW at approximately RP 46.6.
- Use Alternative 3A's alignment for the remainder of Alternative 3B's route.

Geotechnical Considerations. Geotechnical considerations would be the same as those described for Alternative 3A, except that Alternative 3B would parallel the White Horse Canal, not the Free Silver and Smith Ditches.

Potential Structure Requirements. Within the corridor, conceptual design completed to facilitate impact assessment suggests four bridges and four large culverts would be required for Alternative 3B. Table 2-8 presents a breakdown of the potential structure requirements.

TABLE 2-8
Potential Structure Requirements for Alternative 3B—Near Existing Alignment*

Location (RP on PTW)	Location (Description)	Crossing Type	Approximate Structure Length Required
44.8	Smith Ditch	Irrigation crossing	Large culvert
44.9	Smith Ditch	Irrigation crossing	Large culvert
45.0	White Horse Canal	Irrigation crossing	Large culvert
45.8	Farewell Creek	Natural drainage	Large culvert
46.6	US 212 / Railroad Tracks	Overpass	Two 180-m (590-ft) bridges
52.7	US 212	Overpass	Two 87-m (286-ft) bridges

*Information based on conceptual design and modifications may be necessary as the design process continues.

Access. Access issues would be the same as those discussed for Alternative 3A.

Intersections. The three proposed intersections with roads and the four proposed intersections with railroad crossings on Alternative 3B would be stop-sign controlled.

- **US 212/310 Junction.** The existing junction of US 212 and US 310 at Rockvale would be reconstructed to better accommodate the existing and expected traffic, as well as turning trucks (see *Appendix A*, Figure A-6, and the "US 212/310 Junction" discussion in *Section 2.3.2.2*, *Alternative 2—Near West Bench*).
- **US 212/Farewell Road Intersection.** An intersection with the PTW would be required at Silesia (see *Appendix A*, Figure A-16). The PTW would connect with Alternative 3B via Farewell Road. A median width of 11 m (36 ft) and left-turn lanes for both directions are proposed.
- **Railroad Crossings.** Four railroad crossings would connect the new US 212 with the PTW between Silesia and Laurel (see *Appendix A*, Figures A-19 through A-22, and the Alternative 3A "Railroad Crossings" discussion in *Section 2.3.2.3 Alternative 3—Near Existing Alignment*).
- **US 212/PTW North Intersection.** An intersection with the PTW would be required north of the existing railroad underpass at Wilkins Road (see *Appendix A*, Figure A-15, and the Alternative 3A "US 212/PTW North Intersection" discussion in *Section 2.3.2.3 Alternative 3—Near Existing Alignment*).

2.3.2.4 Alternative 5—Combined West Bench

Alternative 5 has two potential alignments, Alternatives 5A and 5B (preferred), that are discussed in the following sections.

Alternative 5A. The Alternative 5A alignment would:

- Use the same alignment as Alternative 3B on the PTW to approximately RP 44.1.
- Turn northwesterly, crossing irrigated croplands and pasturelands.
- Join Alternative 1 southerly of where Alternative 1 intersects Farewell Road.
- Continue north-northeasterly on Alternative 2's proposed route.
- Turn northerly in the S.E. 1/4 of Section 1 in Township 3 South, Range 23 East.
- Rejoin Alternative 1 in the S.W. 1/4 of Section 31 in Township 2 South, Range 24 East, Montana Principal Meridian, which would be approximately 0.45 km (0.28 mi) northwesterly from the old White Horse School site
- Continue on Alternative 1's alignment to the proposed project's northeasterly end near RP 52.7 on the PTW.

Geotechnical Considerations. Alternative 5A ranks fourth of the build alternatives in the amount of earthwork that would be required (approximately 75 percent of the amount

required for Alternative 1). There would be cut depths down to 11 m (36 ft) and fill heights up to 22 m (72 ft). Soil conditions and appropriate measures to address erosion, water seeps, and foundation issues will be determined during final design.

Potential Structure Requirements. Within the corridor, conceptual design completed to facilitate impact assessment suggests four bridges and six large culverts would be required for Alternative 5A. Constructing this alternative would involve a permanent closure of the existing railroad underpass, which would be replaced by a railroad overpass. Table 2-9 presents a breakdown of the potential structure requirements.

TABLE 2-9
Potential Structure Requirements for Alternative 5A—Combined West Bench*

Location (RP on PTW)	Location (Description)	Crossing Type	Approximate Structure Length Required
44.6	Smith Ditch	Irrigation	Large culvert
44.7	Free Silver Ditch	Irrigation	Large culvert
45.7	Farewell Creek	Natural drainage	Large culvert
48.8	White Horse Canal	Irrigation	Large culvert
50.2	White Horse Canal	Irrigation	Large culvert
52.3	Mason Canal	Irrigation	Large culvert
52.4	PTW Interchange	Overpass	Two 79-m (259-ft) bridges
52.5	Railroad Tracks	Overpass	Two 112-m (367-ft) bridges

*Information based on conceptual design and modifications may be necessary as the design process continues.

Access. Access issues would be the same as those discussed for Alternative 1.

Intersections. The six proposed intersections on Alternative 5A would be stop-sign controlled.

- **US 212/310 Junction.** The existing junction of US 212 and US 310 at Rockvale would be reconstructed to better accommodate the existing and expected traffic, as well as turning trucks (see *Appendix A*, Figure A-6, and the “US 212/310 Junction” discussion in *Section 2.3.2.2, Alternative 2—Near West Bench*).
- **US 212/PTW South Intersection.** An intersection with the PTW would be required south of Silesia, close to where Alternative 5A leaves the PTW (see *Appendix A*, Figure A-17). The PTW would be reconstructed to obtain a perpendicular intersection on a straight section of the new US 212. A free-right turn from the new US 212 to the PTW connection is proposed. A 30-m (98-ft) median through the intersection area would provide for safe truck storage within the median as well as for U-turn movements.
- **US 212/Farewell Road Intersection.** An intersection would be required where Alternative 5A intersects Farewell Road (see *Appendix A*, Figure A-2, and the “US 212/ Farewell Road Intersection” discussion in *Section 2.3.2.1, Alternative 1—Far West Bench*).

- **US 212/White Horse Bench Road Intersection.** An intersection would be required where Alternative 5A intersects the north-south portion of White Horse Bench Road (see *Appendix A*, Figure A-3, and the "US 212/White Horse Bench Road Intersection" discussion in *Section 2.3.2.1, Alternative 1—Far West Bench*).
- **US 212/North White Horse Bench Road Intersection.** An intersection would be required where Alternative 5A intersects the North White Horse Bench Road (see *Appendix A*, Figure A-4, and the "US 212/North White Horse Bench Road Intersection" discussion in *Section 2.3.2.1, Alternative 1—Far West Bench*).
- **US 212/PTW Intersection.** A new intersection would be required south of the existing railroad underpass, near RP 52.0 on the PTW. This intersection would connect the PTW with the new Alternative 5A (see the "US 212/PTW Intersection" discussion in *Section 2.3.2.1, Alternative 1—Far West Bench*).

Alternative 5B (Preferred). The Alternative 5B (preferred) alignment would:

- Use the same alignment as Alternative 3B on the PTW to approximately RP 43.7.
- Leave the PTW and turn northwesterly through irrigated farmland.
- Turn northeasterly and briefly join Alternative 1 before it intersects Farewell Road west of Silesia.
- From its intersection with Farewell Road, follow Alternative 5A.

Geotechnical Considerations. Alternative 5B (preferred) ranks second of the build alternatives in the amount of earthwork that would be required (approximately 95 percent the amount required for Alternative 1). There would be cut depths down to 11 m (36 ft) and fill heights up to 22 m (72 ft). Soil conditions and appropriate measures to address erosion, water seeps, and foundation issues will be determined during final design.

Potential Structure Requirements. Within the corridor, conceptual design completed to facilitate impact assessment suggests four bridges and six large culverts would be required for Alternative 5B (preferred). Constructing this alternative would involve a permanent closure of the existing railroad underpass, which would be replaced by a railroad overpass. Table 2-10 presents a breakdown of the potential structure requirements.

Access. Access issues would be the same as discussed for Alternative 1.

Intersections. The six proposed intersections on Alternative 5B (preferred) would be stop-sign controlled.

- **US 212/310 Junction.** The existing junction of US 212 and US 310 at Rockvale would be reconstructed to better accommodate the existing and expected traffic, as well as turning trucks (see *Appendix A*, Figure A-6, and the "US 212/310 Junction" discussion in *Section 2.3.2.2, Alternative 2—Near West Bench*).

TABLE 2-10
Potential Structure Requirements for Alternative 5B—Combined West Bench (Preferred)*

Location (RP on PTW)	Location (Description)	Crossing Type	Approximate Structure Length Required
44.2	Smith Ditch	Irrigation	Large culvert
44.3	Free Silver Ditch	Irrigation	Large culvert
45.7	Farewell Creek	Natural drainage	Large culvert
48.8	White Horse Canal	Irrigation	Large culvert
50.2	White Horse Canal	Irrigation	Large culvert
52.3	Mason Canal	Irrigation	Large culvert
52.4	PTW Interchange	Overpass	Two 79-m (259-ft) bridges
52.5	Railroad Tracks	Overpass	Two 112-m (367-ft) bridges

*Information based on conceptual design and modifications may be necessary as the design process continues.

- **US 212/PTW South Intersection.** An intersection with the PTW would be required south of Silesia, close to where Alternative 5B (preferred) leaves the PTW (see *Appendix A*, Figure A-18). The PTW would be reconstructed to obtain a perpendicular intersection on a straight section of the new US 212. A free-right turn from the new US 212 to the PTW connection is proposed. A 30-m (98-ft) median through the intersection area would provide for safe truck storage within the median as well as for U-turn movements.

- **US 212/Farewell Road Intersection.** An intersection would be required where Alternative 5B (preferred) intersects Farewell Road (see *Appendix A*, Figure A-2, and the "US 212/ Farewell Road Intersection" discussion in *Section 2.3.2.1, Alternative 1—Far West Bench*).

- **US 212/White Horse Bench Road Intersection.** An intersection would be required where Alternative 5B (preferred) intersects the north-south portion of White Horse Bench Road (see *Appendix A*, Figure A-3, and the "US 212/White Horse Bench Road Intersection" discussion in *Section 2.3.2.1, Alternative 1—Far West Bench*).

- **US 212/North White Horse Bench Road Intersection.** An intersection would be required where Alternative 5B (preferred) intersects the North White Horse Bench Road (see *Appendix A*, Figure A-4, and the "US 212/North White Horse Bench Road Intersection" discussion in *Section 2.3.2.1, Alternative 1—Far West Bench*).

- **US 212/PTW Intersection.** A new intersection would be required south of the existing railroad underpass, near RP 52.0 on the PTW. This intersection would connect the PTW with the new Alternative 5B (preferred) (see the "US 212/PTW Intersection" discussion in *Section 2.3.2.1, Alternative 1—Far West Bench*).

2.4 Comparison of Build Alternatives

The environmental impacts of the No Build Alternative and each build alternative were reviewed in selecting a Preferred Alternative. Each potentially impacted resource category was examined to determine if the category would form a basis to select one alternative over another or whether there were clear differences among alternatives. It should be noted that potential impacts were estimated based on the conceptual (approximately 30 percent) design that is available at this early stage of the design process. As the design process continues and as additional avoidance, minimization, and mitigation strategies are evaluated, potential impacts may change slightly.

2.4.1 Selection of a Preferred Alternative

The determination of a Preferred Alternative was based on:

- Regulatory guidance to minimize impacts to a particular resource category (for example, jurisdictional wetlands)
- The actual impact of the alternative

Evaluation of the effects discussed above indicates that Alternatives 1, 5A, and 5B (preferred) would have the least overall impact on the environment as compared with the remaining alternatives. Although a quantative analysis of Alternatives 1, 5A, and 5B (preferred) indicated relative advantages and disadvantages in the various resource categories, a qualitative analysis indicated that none of the three alternatives had a clear environmental impact advantage over the others. Affected landowners on the south end of the project area prefer Alternative 5B over Alternative 5A by a ratio of 5 to 1, discussed in detail below.

In the consideration of build alternatives, differences such as the amount of earthwork and number of structures required to construct the alternative were discussed. Larger amounts of earthwork and greater numbers of structures do not necessarily mean increased impact to the environment. This is evidenced, for example, by the fact that Alternatives 5A and 5B (preferred) have lower wetlands impacts than Alternatives 3A and 3B, which require less earthwork and structures to build. Table 2-11 summarizes the evaluation of resource areas used to select the Preferred Alternative.

2.4.2 Preliminary Cost Comparison

Table 2-11 also presents a preliminary cost comparison of the build alternatives in 2012 dollars escalated at 3 percent per year.

TABLE 2-11

Comparison of the Build Alternatives for Selection of the Preferred Alternative[a]

Comparison Area	Alternative 1—Far West Bench	Alternative 2—Near West Bench	Alternative 3—Near Existing Alignment		Alternative 5—Combination West Bench	
			Alternative 3A	Alternative 3B	Alternative 5A	Alternative 5B (Preferred)
1. Land Use	The following land use information was analyzed and found to be equal across alternatives and not significant.					
Consistency with Local Plans						
Carbon County	Partial	No	Yes	Yes	Partial	Yes
Yellowstone County	Yes	No	Yes	Yes	Yes	Yes
City of Laurel	Yes	Yes	Yes	Yes	Yes	Yes
2. Farmlands—Conversion from NRCS-classified suitable farmland to non-agricultural uses	87.60 ha (216.47 ac)	108.17 ha (267.28 ac)	75.80 ha (187.30 ac)	92.43 ha (228.40 ac)	103.67 ha (256.18 ac)	100.05 ha (247.23 ac)
3. Social Conditions	Impacts to the various categories of social conditions would be basically the same across the build alternatives and did not affect selection of the Preferred Alternative.					
4. Transportation Right-of-Way and Relocations						
Relocations (General)	Relocations would be in accordance with the Uniform Relocation Assistance and Real Property Acquisition Polices Act of 1970 (Public Law 91-646 as amended, 42 U.S. Code [USC] 4601, et seq.), and the Uniform Relocations Act Amendments of 1987 (P.L. 100-17).					
Number of Houses Impacted	2	2	10	10	2	4[d]
Number of Farmsteads Impacted	1	1	2	3	1	1
Number of Businesses Impacted	0	0	2	1	0	0
5. Economic Conditions	Impacts to the various categories of economic conditions would be basically the same across the build alternatives and did not affect selection of the Preferred Alternative.					
Number of local businesses with a potential decline in patronage	4	1	4	1	1	1
Temporary Construction Effects	All build alternatives would have a temporary construction benefit.					
6. Environmental Justice	None of the build alternatives would have environmental justice issues or effects.					
7. Pedestrian and Bicycle Facilities Considerations	Impacts related to pedestrian and bicycle facilities would be basically the same across the build alternatives and did not affect selection of the Preferred Alternative.					

TABLE 2-11
Comparison of the Build Alternatives for Selection of the Preferred Alternative[a]

Comparison Area	Alternative 1—Far West Bench	Alternative 2—Near West Bench	Alternative 3—Near Existing Alignment: Alternative 3A	Alternative 3—Near Existing Alignment: Alternative 3B	Alternative 5—Combination West Bench: Alternative 5A	Alternative 5—Combination West Bench: Alternative 5B (Preferred)
8. Air Quality	Impacts related to air quality would be basically the same across the build alternatives and did not affect selection of the Preferred Alternative.					
9. Noise—Impacts as of 2025	5 noise-sensitive receptors (5 residences)	11 noise-sensitive receptors (17 residences)	5 noise-sensitive receptors (4 residences)	3 noise-sensitive receptors (2 residences)	4 noise-sensitive receptors (4 residences)	3 noise-sensitive receptors (3 residences)
10. Water Flow and Quality	Public water supplies would not be displaced under any of the build alternatives.					
11. Wetlands						
Impacted Area (Total)	0.5 ha (1.5 ac)	0.9 ha (2.0 ac)	1.1 ha (2.5 ac)	0.9 ha (2.0 ac)	0.6 ha (1.5 ac)	0.6 ha (1.5 ac)
Impacted Area (Jurisdictional)	0.5 ha (1.5 ac)	0.8 ha (2.0 ac)	1.0 ha (2.5 ac)	0.8 ha (2.0 ac)	0.6 ha (1.5 ac)	0.6 ha (1.5 ac)
12. Water Bodies and Aquatic Resources	Stream and irrigation system crossings would not impact flows and did not affect selection of the Preferred Alternative.					
13. Vegetation	**Direct habitat loss noted for wetlands and for altered remnant native uplands.**	**Same as Alternative 1**	**Same as Alternative 1**	**Same as Alternative 1**	**Same as Alternative 1**	**Same as Alternative 1**
14. Wildlife Resources	Impacts to the various categories of wildlife would be basically the same across the build alternatives, and the impacts would not be severe enough to affect selection of the Preferred Alternative.					
15. Threatened and Endangered Species and State Species of Concern	There is no difference in impacts to threatened and endangered species or state species of concern among alternatives that could be used to select the Preferred Alternative.					
16. Floodplains	3.5 ha (8.6 ac)	1.3 ha (3.2 ac)	12.4 ha (30.6 ac)	4.3 ha (10.6 ac)	1.3 ha (3.2 ac)	1.3 ha (3.2 ac)

TABLE 2-11
Comparison of the Build Alternatives for Selection of the Preferred Alternative[a]

Comparison Area	Alternative 1—Far West Bench	Alternative 2—Near West Bench	Alternative 3—Near Existing Alignment: Alternative 3A	Alternative 3—Near Existing Alignment: Alternative 3B	Alternative 5—Combination West Bench: Alternative 5A	Alternative 5—Combination West Bench: Alternative 5B (Preferred)
17. Cultural Resources						
Historic Railroad	No 4(f) use	No 4(f) use	No 4(f) use	No 4(f) use	No 4(f) use	No 4(f) use
Free Silver Ditch	No 4(f) use	No 4(f) use	No 4(f) use	No change	No 4(f) use	No 4(f) use
Historic House on Nutting Farmstead	None of the build alternatives would affect the historic house on the Nutting Farmstead.					
18. Hazardous Materials	7 waste collection sites and 3 electric pole transformers	4 waste collection sites	Creosote-stained soil might need to be removed and disposed of	Creosote-stained soil might need to be removed and disposed of	7 waste collection sites and 2 electric pole transformers	7 waste collection sites and 2 electric pole transformers
19. Proposed Visual Quality – Overall Average[b]	3.29 (Moderate)	3.07 (Moderate)	2.67 (Moderate-Low)	2.69 (Moderate-Low)	3.14 (Moderate)	3.20 (Moderate)
20. Energy Conservation	Impacts related to energy would be basically the same across the build alternatives and did not affect selection of the Preferred Alternative.					
21. Geology and Soils	Impacts related to geology and soils would be basically the same across the build alternatives and did not affect selection of the Preferred Alternative.					
Public Comment[c]						
Comments FOR / AGAINST (Percentage)	73% / 8%	28% / 58%	23% / 56%	23% / 56%	See Note c.	
Construction Cost Estimate[d] (in 2012 dollars)	$53.9 million	$45.6 million	$49.9 million	$46.0 million	$51.8 million	$54.0 million

[a]Information based on conceptual design.
[b]Visual Quality Rating (FHWA [1988] Methodology): 7 = High; 5 = Moderate; 1 = Low
[c]Comments not gathered from general public. Affected landowners on south end of the project area prefer Alternative 5B over Alternative 5A by a ratio of 5 to 1.
[d]One is abandoned, and one is occupied rent-free.

2.4.2.1 Alternative 1—Far West Bench

The estimated construction cost for Alternative 1 would be $53.9 million in 2012 dollars. Interchange Option 4, a diamond-type interchange (*Appendix A*, Figure A-5d), was used to evaluate the cost for this alternative.

2.4.2.2 Alternative 2—Near West Bench

The estimated construction cost for Alternative 2 would be $45.6 million in 2012 dollars.

2.4.2.3 Alternative 3A—Near Existing Alignment

The estimated construction cost for Alternative 3A would be $49.9 million in 2012 dollars. This cost includes an estimated $1 million to relocate an electricity substation.

2.4.2.4 Alternative 3B—Near Existing Alignment

The estimated construction cost for Alternative 3B would be $46.0 million in 2012 dollars. This cost includes an estimated $1 million to relocate an electricity substation.

2.4.2.5 Alternative 5A—Combined West Bench

The estimated construction cost for Alternative 5A would be $51.8 million in 2012 dollars. Interchange Option 4, a diamond-type interchange (*Appendix A*, Figure A-5d), was used to evaluate the cost for this alternative.

2.4.2.6 Alternative 5B—Combined West Bench

The estimated construction cost for Alternative 5B (preferred) would be $54.0 million in 2012 dollars. Interchange Option 4, a diamond-type interchange (*Appendix A*, Figure A-5d), was used to evaluate the cost for this alternative.

2.5 Alternatives Considered but Eliminated from Detailed Analysis

In the development of build alternatives, several design aspects were analyzed to determine their appropriateness related to the proposed project's objectives. These build alternatives included the following:

- **Typical Sections with Two Lanes and Three Lanes (Two-Lane with Passing Lanes).** These typical sections were analyzed for Alternative 5B representing all build alternatives, and for the no-build alternative. The two-lane and two-lane with passing lanes sections were not developed into build alternatives and dismissed because they neither satisfy the safety needs for local and regional traffic nor accommodate the projected capacity needs for local and regional travelers over the next 20 years, which are

both objectives of the proposed project's Purpose and Need. Details of the capacity analysis are discussed in *Section 2.2.2* and the results are presented in Table 2-2, which shows the failure to meet LOS B conditions for capacity. The absence of a median presents safety concerns as discussed in *Section 2.2.2.3*, and does not meet the access management objectives by limiting access possibilities as discussed in *Section 2.2.3.2*.

- **Typical Sections Without Medians.** The PTW requires a median to satisfy safety needs. Therefore, typical sections without medians were dismissed.
- **Transportation System Management and Transportation Demand Management (TSM/TDM) Alternative.** This alternative for reducing demand through methods of transport (mobility) and/or physical changes (system) neither satisfies the safety needs for local and regional traffic nor accommodates projected capacity needs. The TSM/TDM Alternative was removed from further consideration.
- **Alternative 4—East Bench.** This alternative lacked agency and public support. Riverine and wetland environments from two river crossings would have been affected by this alternative without providing better transportation service than the other build alternatives. Therefore, Alternative 4 was not carried forward for complete analysis.
- **Existing Alignment.** The existing alignment does not meet the current geometric standards of MDT for this type of highway (MDT, 2004) and is located between an existing railroad right-of-way on one side and residential and agricultural properties on the other. It physically cannot be expanded to a four-lane highway on its existing alignment without severe right-of-way and railroad impacts. Expansion to accommodate a four-lane highway toward the railroad would require the railroad to be relocated in order to maintain minimum right-of-way width for the railroad, and would be cost-prohibitive. Expansion the opposite direction toward the residential and agricultural properties would require additional right-of-way that would affect 47 residential and one business properties, including 25 residential relocations. Therefore, the existing alignment does not meet the Purpose and Need of the proposed project, and was not carried forward.

The TSM/TDM Alternative and Alternative 4—East Bench are discussed in the following sections.

2.5.1 Transportation System Management and Transportation Demand Management (TSM/TDM) Alternative

A Transportation System Management (TSM) strategy applies low-cost actions to increase the capacity of existing facilities for moving traffic more effectively and more efficiently. Transportation Demand Management (TDM) programs are designed to maximize the people-moving capability of the transportation system. TDM programs might increase the number of persons in a vehicle, decrease the total number of vehicles on the road during peak travel periods, or influence the time or need to travel.

For the proposed project, public transportation services would consist of a relatively low-cost bus or shuttle system to consolidate travel trips to and from the project area. The transit system route for buses and/or shuttles would be planned on US 212 between Red Lodge and Laurel, as justified by the riders. With the TSM/TDM Alternative, a wide variety of mobility options would be provided to the public to manage travel demand. Mobility options could include bicycling, van pooling, car pooling, park-and-ride, transit, and walking. These options could be used to reduce the number of vehicles using the road system, especially during peak travel times. Operational system improvements could include high-occupancy vehicle lanes, improved signal timing at specific locations, or one-way street pairs.

Reducing traffic demand through mobility or system improvements was evaluated at the conceptual level as a potential means for improving the highway's efficiency. Limited opportunities exist to implement mobility options because of the rural nature of the PTW and low public demand for such services. For example, FHWA Technical Memorandum T 6640.8A (1987) indicates that this alternative is "usually relevant only for major projects proposed in urbanized areas over 200,000 population." Additionally, a high percentage of traffic on the PTW originates in other cities and states, and it is difficult to reduce such traffic using either TSM or TDM alternatives. There is limited demand for high-occupancy vehicle lanes. In addition, there are no signals on the PTW that could be timed or street grids that could be converted to one-way street pairs. For the reasons listed, the effectiveness of the TSM/TDM Alternative would be very limited. Also, safety improvements would not be feasible under this alternative. Therefore, the TSM/TDM Alternative does not meet the Purpose and Need to improve safety for local and regional traffic needs, nor does it accommodate projected capacity needs. However, elements of the build alternatives, such as wide shoulders, would improve mobility options for walking or bicycling.

2.5.2 Alternative 4—East Bench

The Alternative 4 alignment (Figure 2-2) would:

- Extend east-northeasterly from Alternative 3A's projected junction with US 310 southerly of Rockvale.
- Turn northeasterly after intersecting Brush Road.
- Cross both the railroad tracks and the Clarks Fork Yellowstone River before turning northerly.
- Return onto a northeasterly bearing after intersecting Richards Lane approximately 2.3 km (1.4 mi) east-northeasterly of Silesia.
- Curve northwesterly across Byam Road.
- Cross the Clarks Fork Yellowstone River again.
- Turn northeasterly to connect onto the PTW near RP 52.3.

Natural resource and regulatory agencies expressed concern about impacts to the riverine and wetland environments from two river crossings. For this alternative to be acceptable, bridge

crossing abutments would be allowed only limited encroachment on the riparian areas paralleling the river. This would be a difficult, challenging, and costly bridge crossing. Alternative 4 was removed from further consideration because it lacked agency and public support, there were potentially significant environmental impacts, and it was unable to provide better transportation service than the other build alternatives.

2.6 Basis for Recommending the Preferred Alternative

The build alternatives would:

- Improve traffic operations (for example, decrease congestion and increase safety)
- Have similar effects on both the natural and constructed environments
- Satisfy the Purpose and Need of the proposed project
- Improve the projected capacity of US 212 through reconstruction of the highway

The No Build Alternative and the build alternatives (Alternatives 1, 2, 3A, 3B, 5A, and 5B) have been evaluated using the environmental analysis process.

The No Build Alternative would not satisfy the Purpose and Need of the proposed project (for example, it would not improve the safety and projected capacity of US 212). Since a multilane facility would provide opportunities for passing slower moving traffic, overall travel times for the build alternatives would be less than travel times using the No Build Alternative.

MDT and FHWA determined that either Alternative 1 or 2 when compared to Alternative 3 was more beneficial for the following comparative reasons:

- Fewer impacts to homes
- Less wetland impacts
- Improved access management considerations
- Reduced railroad conflicts
- Improved safety

MDT and FHWA further tried to differentiate between Alternatives 1 and 2, but the alignments appeared similar in quantitative analysis. Therefore, public and landowner input was sought. That input resulted in the creation of Alternative 5, which combines some elements of Alternatives 1 and 2. When it was realized that Alternative 5 went through a planned subdivision near Rockvale, MDT and FHWA renamed Alternative 5 as Alternative 5A and created Alternative 5B (preferred) . Alternative 5B (preferred) is located primarily along the original Alternative 5 alignment with the exception of a shift to incorporate landowner input and avoid the subdivision.

The public has been an active partner in developing the build alternatives throughout the planning and evaluation stages of the proposed project. MDT has listened closely to public preferences as a matter of MDT's policy to involve the public in the decision-making

process. A series of three public meetings and one neighborhood meeting were held and comments from each were considered in the development of alternatives and the selection of the preferred alternative. At the third public meeting a majority of the public expressed a preference for Alternative 2 from Rockvale going north and up to the bench to the point where it was closest to Alternative 1, then continuing along Alternative 1. This combination of alternatives addressed their concerns that businesses would be impacted if Rockvale was bypassed, and safety would not be adequately addressed if the northern portion of the route remained on the PTW. The public suggested a connection between Alternatives 2 and 1 be moved farther south to reduce some of the impacts to properties and other resources in the immediate area of the connection. This led to the development of Alternative 5 (now called 5A). Since the only part of the Alternative 5A route not presented previously to the public in detail was a short section between Alternatives 2 and 1 a little north of Rockvale, a small group meeting of affected landowners was held. This group suggested shifting the connection between Alternatives 2 and 1 slightly farther south, creating Alternative 5B (preferred). Alternative 5B (preferred) affects two additional houses near its intersection with the PTW, however they are in disrepair; one is abandoned and the second is occupied rent-free. The landowners preferred this compromise for the improvement of Alternative 5A, with respect to its proximity to homes and farming operations.

As a multilane highway, Alternative 5B would provide operations at LOS A at least through the year 2025. The undeveloped nature of the corridor would allow the planned control of access during the design process to minimize what might be considered adverse impacts by those with properties abutting the highway and those needing access to the highway. The location of properly spaced intersections allowing U-turns or cross-turning movements would effectively provide the access control desired, resulting in acceptable operating safety along the corridor. As with the other build alternatives, a non-traversable median would be provided for safe uses of these locations.

For the above reasons, FHWA and MDT have decided to recommend Alternative 5B as the Preferred Alternative in this Draft EIS. The final selection of an alternative will not be made until the alternatives' impacts and comments on the DEIS and from the public hearing have been fully evaluated.

2.7 Permits and Other Governmental Actions

Implementation of a build alternative might include, but not be limited to, one or more of the following federal actions:

- Issuance of a Section 404 of the CWA Permit by the COE for proposed fill impacts to jurisdictional wetlands and Waters of the U.S. For further information, see the CWA Section 404(b)(1) analysis of the proposed project in *Appendix E*.
- Approval for floodplain encroachments from the FEMA administered by each county.
- Coordination with the FWS concerning threatened and endangered species.

Implementation of a build alternative might include, but not be limited to, one or more of the following state actions:

- Compliance with the water quality provisions of MCA 75-5-308 for Section 318 authorizations and the stream protection provisions of MCA 87-5-501 through 509.
- An SPA 124 authorization from Montana Fish, Wildlife and Parks (MFWP).
- A Section 401 of the CWA certification from the MDEQ.
- A Section 402/MPDES authorization from the MDEQ.
- A water use permit from the Montana Department of Natural Resources and Conservation.
- Coordination with the MFWP concerning state species of concern.

CHAPTER 3 AFFECTED ENVIRONMENT

This affected environment chapter describes the existing social, economic, and environmental conditions in the Rockvale to Laurel project area. The existing conditions are a baseline for assessing impacts associated with the proposed highway reconstruction project for US 212.

This chapter is organized into the following sections:

- Land Use
- Farmlands
- Social Conditions
- Transportation Right-of-Way and Relocations
- Economic Conditions
- Environmental Justice
- Pedestrian and Bicycle Considerations
- Air Quality
- Noise
- Water Quality
- Wetlands
- Water Bodies and Aquatic Resources
- Vegetation
- Wildlife Resources
- Threatened and Endangered Species and State Species of Concern
- Floodplains
- Cultural Resources
- Hazardous Materials
- Visual Resources
- Energy Consumption
- Geology and Soils

3.1 Land Use

The US 212 project area is located within both Carbon County and Yellowstone County between the City of Laurel and the community of Rockvale. The unincorporated town of Silesia, about 5.1 km (3.2 mi) from the southern terminus of the project area, is situated on both sides of the existing US 212 alignment.

The project corridor is populated with small farms and residences, some of which abut US 212. As shown in Figure 3-1, land uses surrounding the highway include agricultural, business, and the railroad right-of-way. Concentrated growth and development is limited to nearby Laurel in Yellowstone County. New growth in Carbon County (within the project area) tends to be scattered rural residential development.

This section includes information about:

- Carbon County Land Use
- Yellowstone County Land Use
- Project Area Land Use
- Applicable Land Use Policies

3.1.1 Carbon County Land Use

Carbon County covers 531,698 hectares (ha) (1,313,850 acres [ac]). Public lands, which account for 45 percent of the land ownership, are not available for development (Carbon County, 2003). Land use within the county varies greatly, depending on its elevation. Land situated lower in the Clarks Fork Yellowstone River valley tends to be more suited for agricultural production because of its fertile soil and good drainage. Land situated at higher elevations tends to support the production of wheat or hay or to be used as pastureland.

The number of new housing units in the county increased by more than 17 percent from 1990 to 2000. During that time, the county processed 270 subdivision applications. Mobile homes comprise 17 percent of total housing. Approximately 7 percent of the housing is in unsound or poor condition (Carbon County, 2003).

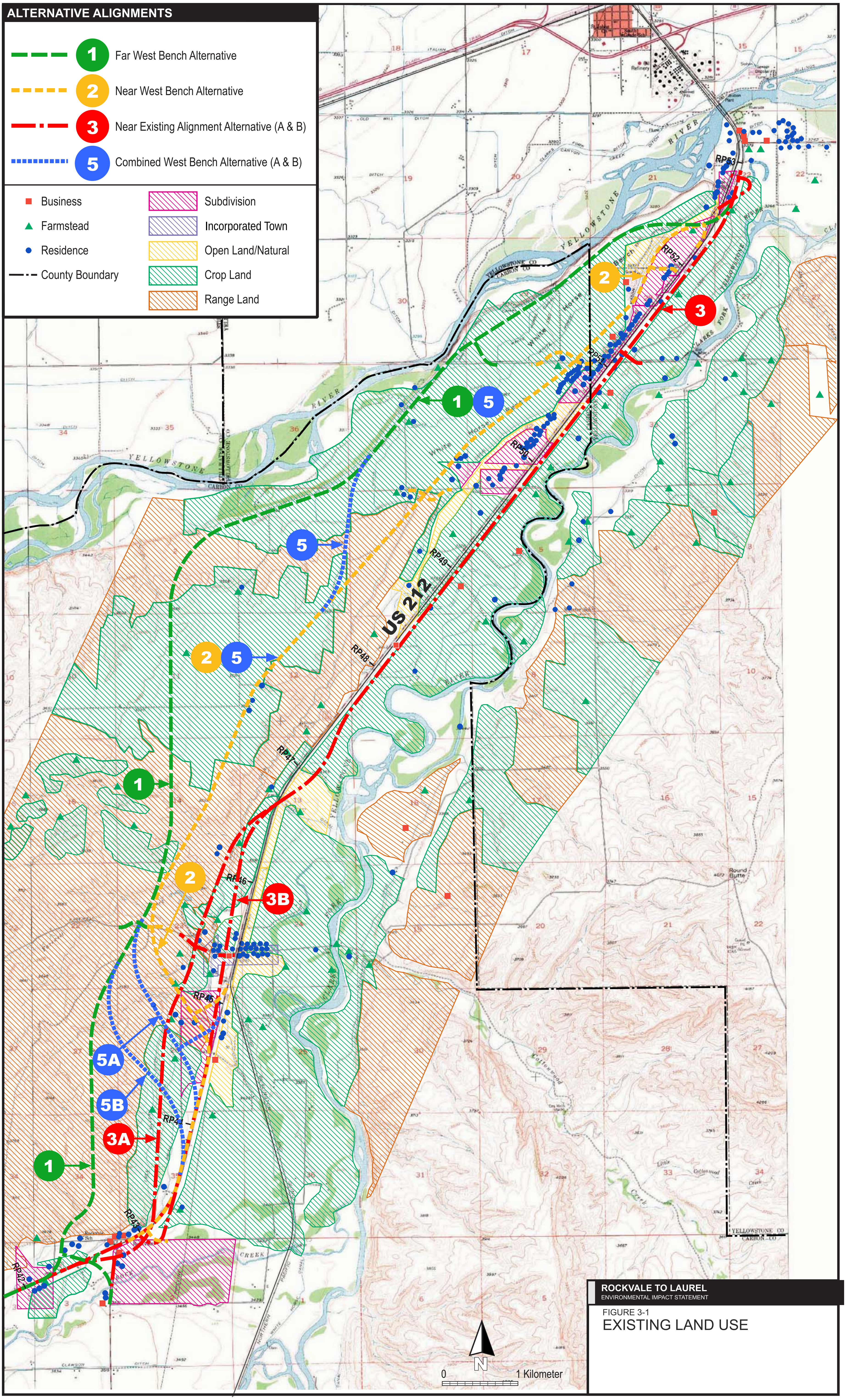
Much of the growth in new housing units can be attributed to vacation or seasonal homes, which accounted for approximately 19 percent of the housing in Carbon County. For example, between 1980 and 1990, the number of seasonal and vacation homes increased from 205 to 893 (Carbon County, 2003). This growth in seasonal and vacation homes can be attributed to such things as the proximity of Carbon County to Red Lodge (for winter skiing), the Beartooth Highway, the Chief Joseph Highway, and Yellowstone National Park and to the presence of the Clarks Fork Yellowstone River (excellent trout fishing).

The BNSF Railway operates within Carbon County. The BNSF Railway parallels US 212 to the east (that is, throughout the majority of the project area) beginning near Silesia. According to the *Carbon County Montana Growth Policy*, 10 to 12 trains cross the county in a 24-hour period, traveling between Laurel, Montana, and Denver, Colorado (Carbon County, 2003).

3.1.2 Yellowstone County Land Use

Yellowstone County covers approximately 690,494 ha (1,706,240 ac). The majority of the land is used for agricultural purposes (76 percent). The remaining land uses include the Crow Tribal Trust and Individual Allotments (8.5 percent), residential (2 percent), commercial and industrial (0.8 percent), and park land (0.1 percent). The balance of the land (12.5 percent) is for other uses, including roads, waterways, and public lands not included in the categories listed above (Yellowstone County, 2003).

The City of Laurel owns Riverside Park. This park is outside the city limits and adjacent to US 212 north of the project area.



ROCKVALE TO LAUREL
ENVIRONMENTAL IMPACT STATEMENT

FIGURE 3-1
EXISTING LAND USE

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3.1.3 Project Area Land Use

The project area covers approximately 3,875 ha (9,575 ac) of land. For purposes of this analysis, the project area is defined as the properties through which one or more of the alternatives would cross. Approximately 90 percent of the project area is located within Carbon County, with the remaining 10 percent in Yellowstone County (Figure 3-1).

The portion of the project area in Carbon County is composed of 57 percent cropland, 37 percent rangeland, and the remainder either open/natural land or residential subdivisions. The Yellowstone County portion of the project area is classified as 94 percent cropland and 6 percent open/natural land (Table 3-1). The majority of the residences within the project area are located adjacent to US 212. As a result of the project area's proximity to the City of Laurel, residences are more concentrated in Yellowstone County than in Carbon County (Figure 3-1). However, there are more residences in Carbon County than in Yellowstone County (Table 3-2). Approximately 10 businesses are located within Carbon County and 6 businesses are located within Yellowstone County. Tribal lands are not present in or adjacent to the project area.

TABLE 3-1
Project Area General Land Uses by County

	Carbon County	Yellowstone County
Rangeland	57%	94%
Cropland	37%	0%
Open/Natural Land	4%	6%
Residential (Subdivisions)	2%	0%*

*Less than 0.5 percent

TABLE 3-2
Project Area Residences and Businesses by County (Number)

	Carbon County	Yellowstone County
Residential Units		
Farmsteads	25	4
Subdivisions	39	14
Rural	24	6
Town	21	0
Businesses	10	6

3.1.4 Applicable Land Use Policies

Carbon County, Yellowstone County, and the City of Laurel have developed growth policies intended to provide direction for future growth and land use planning within their jurisdictions (Carbon County in 2003, Yellowstone County in 2003, and the City of Laurel in 2004). The portion of the project area in Yellowstone County is within the future growth area of the City of Laurel, so the city's growth policy would be the main document used for determining future land use. State of Montana planning documents do not describe applicable land use policies, goals, or objectives relative to this project. The following sections summarize the relevant land use issues and policies for Carbon County; Yellowstone County and the City of Billings; and the City of Laurel.

3.1.4.1 Carbon County Montana Growth Policy

Although the *Carbon County Montana Growth Policy* (adopted August 14, 2003) does not identify specific land use designations for the project area, it does provide general policies and objectives for guiding future development.

- Objective 1.4: Discourage the conversion of prime agricultural lands to other uses.

  1.4.A. Request that the Montana Department of Transportation (MDOT [sic]) provide information on how alternatives under consideration for both 212 and Highway 78 reconstruction will affect existing residences and prime agricultural land. Develop a County position on a preferred location for the 212 re-route that will minimize disruption of citizens and the loss of prime agricultural land.

- Objective 1.5: Encourage development in areas that are not in agricultural production.
- Objective 1.6: Ensure direct County input into any proposal with the potential to cause large-scale impacts to land use, natural resources, or quality of life in the County.

  1.6.B. Request that Montana Department of Transportation provide regular briefings on the status of the 212 re-route and upgrade project. Request that the MDOT hold a public meeting on this project in the Fort Rockvale area so that Carbon County residents can be updated and offer input and concerns. Provide County input to the project so that access points are coordinated with County infrastructure.

- Objective 1.7: Encourage the preservation of open space and wildlife habitat in the County.

3.1.4.2 Yellowstone County and the City of Billings 2003 Growth Policy

The *Yellowstone County and the City of Billings 2003 Growth Policy* identifies goals and policies relative to the project area. The relevant Yellowstone County land use goals include:

- Land Use Element
  - Issue: Rural townsites are not prepared to handle increased growth.

    Goal: Growth management tools available to rural townsites.

    Objectives:

    - Empower communities to direct growth.
    - Use County resources and services more efficiently.
  - Issue: Urban sprawl threatens the rural character of land surrounding Billings, increases the cost of providing public services, and threatens the vitality of the city core and downtown area.

    Goal: Contiguous development focused in and around existing population centers separated by open space.

    Objectives:

    - Ensure the continued functionality of natural systems.
    - Use City and County resources in a cost effective manner.
- Economic Development
  - Issue: Entryways to our communities should be attractive and not present physical barriers discouraging economic development.

    Goal: Attractive and accessible communities.

    Objectives:

    - Reduce travel time through town.
    - Increase the visual appeal.
- Natural Resources
  - Issue: The quality of the Yellowstone River and the associated riparian habitat is threatened.

    Goal: A healthy river ecosystem system that supports multiple uses.

    Objectives:

    - Ensure continued recreational access.
    - Protect wildlife and wildlife habitat.

- Transportation
  - Issue: Lack of adequate traffic control.

    Goal: Reduced rate of vehicle collisions.

    Objectives:

    - Reduce potential harm to people and property.
    - Maintain safe and efficient traffic flow.
  - Issue: The design of roads, streets, and pedestrian facilities can be more attractive and functional.

    Goal: Visually appealing rights-of-way that serve the needs of all users.

    Objectives:

    - Employ smart, cost effective designs.
    - Use designs that recognize the needs of all users.
    - Incorporate attractive visual elements into rights-of-way design.

3.1.4.3 City of Laurel 2004 Growth Policy

The *City of Laurel 2004 Growth Policy* describes land use issues and provides policy and strategies to direct future actions. The City of Laurel provides comprehensive planning for approximately 1 mile south and all areas north of the Yellowstone River. Three of the four policies for land use issues have some relevance to the proposed project. The fourth, non-relevant, policy for land use issues addresses industrial development near the local airport. The three relevant policies are:

- Concentrate development in areas with access to community water and sewer and promote infill development on vacant land within the city limits.
- Enable the development of affordable housing throughout the jurisdictional area.
- Identify community aesthetic enhancement opportunities. (This item is paraphrased from a list of enhancement strategies.)

3.2 Farmlands

Agriculture and ranching are the dominant land uses in the project area. The primary crops raised are sugar beets, malt barley, corn, wheat, and alfalfa. In the northern portion of the project area, some farmland has been converted to residential development, and this trend will likely continue with or without the implementation of the proposed project.

The farmland classification system, according to the U.S. Department of Agriculture (USDA), identifies map units as prime farmland or farmland of statewide importance. Additional farmlands may be mapped as prime units by state or local importance defined by state law or local ordinance. Further clarification to farmland classification occurs within the *National Soils Survey Handbook* (NSSH) (Natural Resources Conservation

Service [NRCS], 2005) with the additional subset of prime if irrigated soil units mapped as indicated.

- **Prime Farmland.** The definition of Prime Farmland used by the NRCS includes “land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is also available for these uses (the land could be cropland, pastureland, rangeland, forest land, or other land, but not developed urban built-up land or water). It has the soil quality, growing season, and moisture supply needed to economically produce sustained high yields of crops when treated and managed, including water management, according to acceptable farming methods. In general, prime farmlands have an adequate and dependable water supply from irrigation, a favorable temperature and growing season, acceptable salt and sodium content, and few or no rocks. They are permeable to water and air. Prime farmlands are not excessively erodible or saturated with water for a long period, and they either do not flood frequently or are protected from flooding” (7 Code of Federal Regulations [CFR] 657.5).
- **Farmland of Statewide Importance.** The definition of Farmland of Statewide Importance used by the NRCS includes farmlands “that are nearly prime farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods” (7 CFR 657.5).
- **Prime Farmland if Irrigated.** The NSSH is published by NRCS to deliver scientifically based information on soil classification and use. The NSSH further clarifies Prime Farmland if Irrigated, “Some map units include areas that have a developed irrigation water supply that is dependable and of adequate quality and areas that do not have such a supply. In these units, only the irrigated areas meet the prime farmland criteria” (NSSH 622.04[a]4) (NRCS, 2005).

Figure 3-2 illustrates the location of the farmland in the project area based on the farmland classification system developed by the NRCS. As shown in Figure 3-2, much of the Prime if Irrigated Farmland lies near or in the floodplains of the Clarks Fork Yellowstone River and of the Yellowstone River. Much of the Farmland of Statewide Importance appears to be located on the higher terraces and foothills surrounding the valley floor.

The *Yellowstone County and the City of Billings 2003 Growth Policy* (2003) states: “Safeguards are needed so that agriculture can continue to be an important component of the County’s economy. The most significant land use issue relating to agriculture is the intrusion of residential uses into areas of agricultural production.” The *Carbon County Montana Growth Policy* (2003) indicates a clear desire to protect farming while encouraging controlled growth and development opportunities.

3.3 Social Conditions

This section describes the general community characteristics; public services; parks and recreation opportunities; and transportation patterns and safety found in Carbon and Yellowstone counties near Laurel, Montana.

3.3.1 Community Characteristics

Demographic information was obtained from the U.S. Census Bureau. The population of Carbon County was 9,552, while that of Yellowstone County was 129,352 where the City of Billings population made up more than 70 percent of Yellowstone County's population. (U.S. Census Bureau, 2000).

According to U.S. Census Bureau data, only minor variations exist in the distribution of people by gender, age, and race/ethnicity among the counties and the City of Laurel.

Except for the cities of Laurel and Billings, the population for the region is widely dispersed and unincorporated. Both cities, which are located in Yellowstone County, account for the large difference in population between the two counties. Except for the two cities, the rural landscape is similarly populated in both counties.

3.3.2 Public Services

The police department in the City of Laurel is a 12-person force that patrols within the city limits (Gabrian, personal communication [pers. comm.], 2006). The Carbon County Sheriff's Department and the Yellowstone County Sheriff's Department respond to emergencies within their respective counties. The Montana Highway Patrol responds to emergencies along US 212 and US 310 within the project area.

Fire protection in Laurel is provided by a 35-member volunteer fire department. That fire department serves Districts 5, 7, and 8, which cover the project area and the City of Laurel. Rockvale is in District 8.

The ambulance service for both counties is a volunteer service that provides basic life support response. Yellowstone County's ambulance service, which is stationed in Laurel, provides service on US 212 north of Rockvale. Carbon County's basic life support service, which is stationed in Joliet, provides service south of there, including Rockvale (Rieger, pers. comm. 2006). Advanced life support response is a specialized ambulance emergency response program. Yellowstone County's advanced life support, which is contracted with American Medical Response, travels from Billings. Carbon County's advanced life support is provided from both Joliet and Red Lodge (Fought, pers. comm., 2001).

Yellowstone Valley Electric Co-Op provides electricity and Montana Dakota Utility provides natural gas to properties in the project area. Northwestern Energy has some utility lines that cross the project area. There is an electrical substation adjacent to the route for Alternatives 3A and 3B.

The US 212 corridor contains six public water supplies: the City of Laurel, The River's Edge, El Rancho Inn, Rockvale Travel Plaza, Quick Stop Drive In, and Fort Rockvale Restaurant and Lounge. The City of Laurel's water supply is from the Yellowstone River and the other public water supplies are from wells. Most rural water supplies come from wells. (See discussion in *Section 3.10.5, Source Water Protection*.)

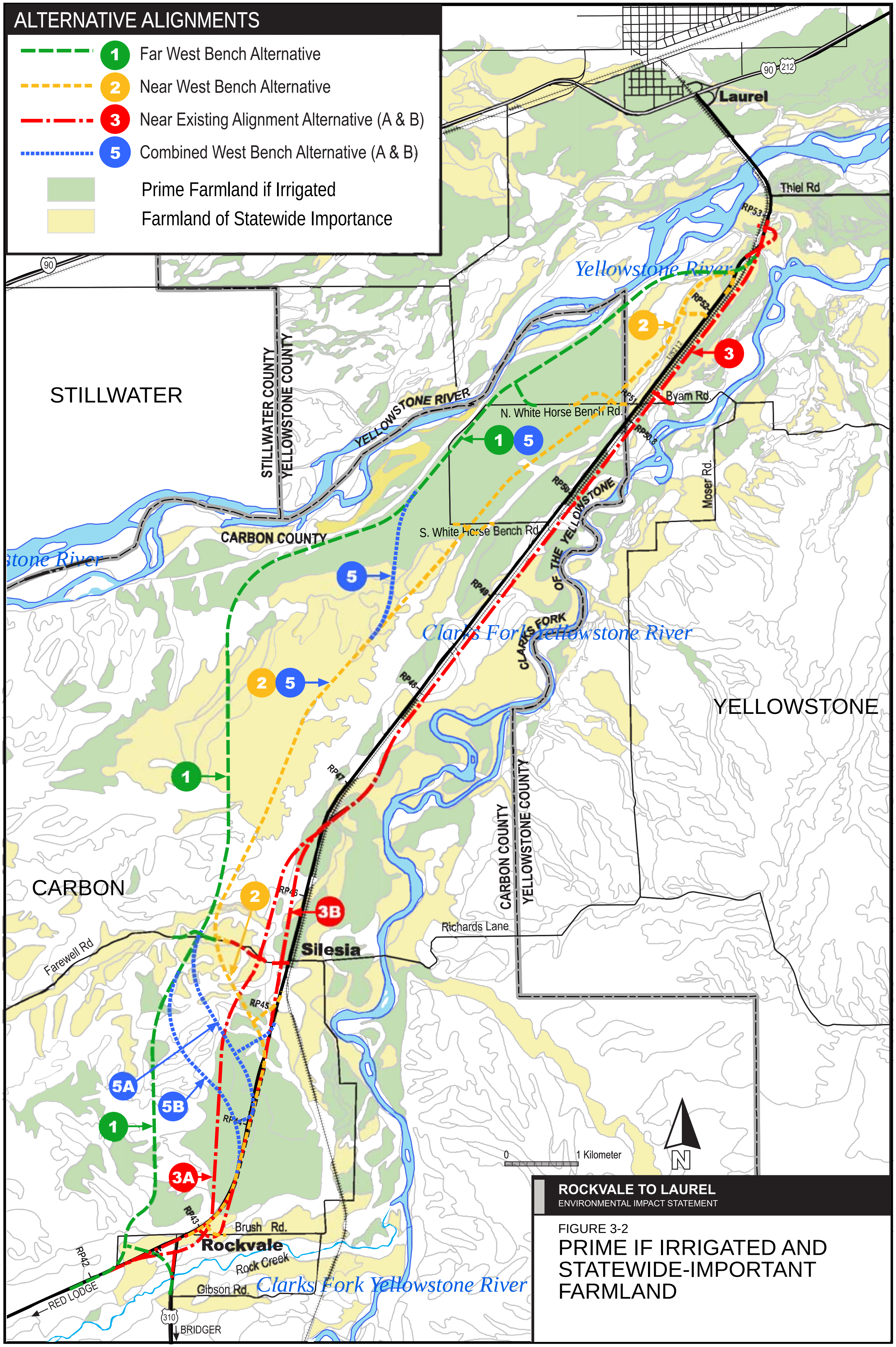

FIGURE 3-2
PRIME IF IRRIGATED AND STATEWIDE-IMPORTANT FARMLAND

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3.3.3 Parks and Recreation Opportunities

Although recreational facilities do not exist within the project area, Riverside Park lies along US 212 south of the City of Laurel and immediately north of the project area. The City of Laurel owns Riverside Park, which is outside the city limits. The city plans to annex the park within the next couple of years (Cumin, pers. comm. 2006). Riverside Park provides the following facilities: a rod-and-gun club; a trap-shooting club; tent camping; recreational vehicle camping with water and sewer hookups; and a large building rented for weddings, reunions, picnics, and other large activities (McGann, pers. comm., 2001). The park contains gravel paths and parking areas and has not been upgraded for wheelchair access to the public. It is uncertain when upgrades to the park will be made (Cumin, pers. comm. 2006).

The project area does not include other public facilities owned or managed by city, county, state, or federal governments. School children in Rockvale and Silesia are bused to Joliet.

3.3.4 Transportation Patterns and Safety

US 212 is the primary north-south transportation route in Carbon County, and the portion north of Rockvale is on the NHS. US 212 serves residential, recreational, commercial, and agricultural land uses throughout the county. In addition, it is a primary transportation route for interstate traffic between southern Montana and northern Wyoming.

The mix of local and regional traffic results in conflicts, including slow versus faster travel desires, sightseeing versus destination-oriented driving, and frequent stops versus through connectivity with other portions of the NHS. The existing two-lane US 212 is undersized for carrying anticipated traffic volumes in the next 20 years and beyond, further compounding traffic patterns into the future.

As discussed in *Section 1.3, Need*, safety is a major concern and part of the need for this project. Accidents involving truck traffic are higher than the state average for similar roadways in Montana. Accidents of all kinds are most frequently located at points of access (such as driveways and local roadways connecting to US 212) and stationary objects. The distance for storing vehicles stopped between US 212 and railroad crossings (vehicle storage distance) is inadequate, also leading to more accidents.

3.4 Transportation Right-of-Way and Relocations

The US 212 right-of-way through Rockvale is 27.4-m (90-ft) wide, with 12.2 m (40 ft) on the north side and 15.2 m (50 ft) on the south side of US 212. North of Rockvale, the US 212 right-of-way is adjacent to either active or abandoned railroad rights-of-way (on the eastern edge) and to farmland or rural residential land (on the western edge).

From Rockvale to Silesia (approximately 4.4 km [2.7 mi]), the railroad has been abandoned and its right-of-way has been sold. Some of this previous railroad right-of-way is held privately and some is owned by MDT. The exact width of the highway right-of-way in this section has

not been researched. The width is a minimum of 30.5 m (100 ft), with 15.2 to 18.3 m (50 to 60 ft) on the west side of US 212 and 15.2 to 54.9 m (50 to 180 ft) on the east side.

Between Silesia and the railroad underpass at the north end of the proposed project (approximately 12.1 km [7.5 mi]), the US 212 right-of-way is adjacent to the active BNSF Railway right-of-way. The highway right-of-way owned by MDT is generally 24.4-m (80-ft) wide. This is augmented by a 6.1-m (20-ft) easement on the railroad right-of-way, which provides a functional width of 30.5 m (100 ft) for US 212.

3.5 Economic Conditions

The economic conditions section provides a regional economic summary and information about the local economy.

3.5.1 Regional Economic Summary

Key indicators of the regional economy were evaluated for both Carbon and Yellowstone counties, such as number and types of industry jobs, unemployment rates, per capita income, and property taxes collected.

3.5.1.1 Employment

Table 3-3 presents the number of employed adults for Carbon and Yellowstone counties from 1990 to 1999.

TABLE 3-3
Employment Trends for Carbon and Yellowstone Counties, 1990-1999

	Carbon County			Yellowstone County		
Industry	**1990**	**1999**	**Change**	**1990**	**1999**	**Change**
Farm employment	778	893	15%	1,288	1,431	11%
Non-farm employment	2,788	4,089	47%	69,218	87,415	26%
Private	2,242	3,487	56%	60,454	78,163	29%
Agriculture/forestry/fisheries	106	153	44%	568	848	49%
Mining	34	57	68%	879	653	-26%
Construction	193	324	68%	2,842	5,526	94%
Manufacturing	127	151	19%	3,545	3,730	5%
Transportation and public utilities	108	137	27%	4,576	5,430	19%
Wholesale trade	50	101	102%	5,818	6,750	16%
Retail trade	615	886	44%	14,045	18,232	23%
Finance, insurance, and real estate	173	347	101%	5,935	6,231	5%
Services	836	1,331	59%	22,246	30,763	38%
Government	546	602	10%	8,764	9,252	6%
Federal, civilian	73	73	0%	1,811	1,724	-5%
Military	62	54	-13%	897	735	-18%
State and local	411	475	16%	6,056	6,793	12%
State	24	25	4%	1,588	1,713	8%
Local	387	450	16%	4,468	5,080	14%

Source: Montana Department of Commerce, Census and Economic Information Center (Census 2000).

Yellowstone County has a much larger work force than Carbon County, due to the population of Billings. The services industry, retail trade, local government, and agriculture/ forestry/fisheries are large business sectors for both counties. The fastest growing business sectors between 1990 and 1999 were wholesale trade, finance/insurance/real estate, construction, and mining (in Carbon County) and construction, agriculture/forestry/fisheries, and the service industry (in Yellowstone County).

3.5.1.2 Unemployment

Table 3-4 presents the unemployment rates for Carbon County, Yellowstone County, and the State of Montana for 1995 and 2005. In 1995, the unemployment rate in Montana was similar to Carbon County's, while Yellowstone County's was lower by more than 1 percent. In 2005, the state unemployment rate had dropped by 1 percent (to 4.0 percent), which is approximately the same reduction in the unemployment rates of both Carbon and Yellowstone counties. Carbon County's unemployment rate was closer to the state average, while Yellowstone County's was more than 1 percent lower. These numbers do not reflect the downturn in the U.S. economy during 2002.

TABLE 3-4
Average Annual Unemployment Rates by County

	1995 Rate	2005 Rate	Percentage Point Change 1995-2005
Carbon County	6.0%	3.5%	-2.5%
Yellowstone County	4.8%	3.2%	-1.6%
Average	5.4%	3.4%	-2.0%
Montana	5.9%	4.0%	-1.9%

Sources: Montana Department of Commerce, Census and Economic Information Center and Montana Department of Labor and Industry, Research and Analysis Bureau, Local Area Unemployment Statistics.

3.5.1.3 Per Capita Income

Per capita income for Carbon County, Yellowstone County, and the State of Montana for 1990 and 1999 is shown in Table 3-5. The 1999 average per capita income in Carbon County was approximately the same as the state average. The 1999 average per capita income in Yellowstone County was $2,152 higher than the state average—a $2,205 difference in per capita income between Carbon and Yellowstone counties. In 1999, the average U.S. per capita income was $21,587, and the State of Montana average was $17,151. Montana was approximately $4,400 below the national average. Between 1990 and 1999, Yellowstone County's average annual rate of increase in per capita income (1 percent) kept pace with the rates for the state and the nation. Carbon County's per capita income increased at an average annual rate of 1.7 percent. In summary, Carbon County's per capita income was below the state average, but was growing at a faster rate than Yellowstone County's per capita income.

TABLE 3-5
Per Capita Income, 1990-1999

	1990	1999	Difference from 1999 State Average	Percent Average Annual Increase (1990-1999)	Percent of State Average (1999)
Carbon County	$14,764	$17,204	$53	1.7%	100%
Yellowstone County	$17,538	$19,303	$2,152	1.0%	113%
Montana	$15,524	$17,151	$0	1.0%	NA
United States	$19,650	$21,587	$4,436	1.0%	126%

NA = not applicable
Source: U.S. Census Bureau, 2000.

3.5.1.4 Taxes

Public finance mechanisms include taxes, royalties, and other fees paid to local, state, and federal governments. Taxes in Montana consist of property taxes, income taxes, natural resource taxes (coal, oil, and natural gas), and selective sales taxes (cigarette and alcoholic beverages). Montana does not have a general sales tax.

Table 3-6 shows the types and amounts of property taxes collected in Carbon and Yellowstone counties in the 2000 tax year. Total property taxes collected in Yellowstone County were approximately 10 times greater than those collected in Carbon County.

TABLE 3-6
Property Taxes Collected in Carbon and Yellowstone Counties (2000)

	Carbon	Yellowstone
Class 3 (agricultural lands)	$2,283,678	$3,759,050
Class 4 (land and Improvements)	$12,157,931	$134,357,674
Residential	$10,310,857	$90,366,752
Commercial	$1,732,976	$39,801,551
Industrial	$87,816	$3,319,712
Total	$26,573,258	$271,604,739

Source: Montana Department of Revenue, 2000.

3.5.2 Local Economy

The local economy section provides some economic data for the project area, the City of Laurel, and Red Lodge. The local economy was assessed through use of local maps; county records; phone surveys with local governments and businesses; and field visits to the project area.

US 212 receives a substantial amount of seasonal traffic from tourists traveling to the Beartooth Mountains and Yellowstone National Park for outdoor recreation. Many businesses along US 212 rely on tourism dollars from summer vacationers, fall sportsmen, and winter skiers. According to Tom McNew, owner of the Rockvale Travel Plaza, of the seasonal traffic, the summer business is the most robust. The local businesses within the project area include three restaurants, one convenience store, and a tractor sales and repair business.

The largest business sectors in the City of Laurel, which is located just north of the project area, are the retail trade and service industries. Red Lodge, a tourist town south of the project area, provides snow skiing to the surrounding area, including Billings.

The “Peaks to Prairie Triathlon” is an annual event that draws hundreds of athletes and their families to the local area. The three-phased race is a 6.4-km (4-mi) run, a 64.4-km (40-mi) cycle, and a 24.1-km (15-mi) canoe race that begins in Red Lodge and ends in Billings. The section of US 212 proposed for realignment is used for the cycling phase.

3.6 Environmental Justice

To evaluate the project’s potential effects, analysts visited the study area to observe the current neighborhood environment, reviewed data from the U.S. Census Bureau for demographic information, reviewed existing planning documents, and reviewed the public outreach performed and the comments received from the public. Analysts collected information from a variety of Federal, state, and local sources and used data from the U.S. Census Bureau Tracts to define study area demographic characteristics and projections. Potential effects on the social elements in the study area were identified by reviewing existing data and the project design. The study area included three census tracts that intersect the corridor. The census tracts are larger than the study area; therefore, the available data analyzed in this section applies to a broader area than the study area.

Two Federal regulations specify how projects can impact low-income and minority groups. Under Executive Order 12898 (February 1994). If adverse impacts to minority or low-income groups are disproportionately high, an effort must be made to avoid them or to minimize the impacts and provide mitigation. Under Title VI of the Civil Rights Act of 1964, no person may be discriminated against because of race, color, national origin, sex, or age under any program or activity receiving Federal financial assistance.

3.6.1 Minority Population

U.S. Census data indicated that the study area has similar minority populations to the surrounding area at different scales, including the State of Montana, Yellowstone County, and Carbon County. The percentage of minority populations is shown in Table 3-7. Because the study area is similar to the larger population, the surrounding areas were averaged and the minority population is anticipated to represent 4.7 percent of the total population (lower than the state and Yellowstone County average). No disproportionately high levels of minority populations were identified through analysis of census data or site visits to the study area.

TABLE 3-7
Minority Populations Within and Surrounding the Project Area*

Area	Total Population	Minority Population	% Minority
Montana	902,195	84,591	9.4%
Yellowstone County	129,352	9,107	7.0%
Carbon County	9,552	224	2.3%
Census Tract 30009000100	2,230	70	3.1%
Census Tract 30111001400	9,976	417	4.2%
Census Tract 30111001600	5,934	374	6.3%
Study Area	18,140	861	4.7%

*Source: U.S. CensUS-2000 (CENSUS 2000)

3.6.2 Household Income

In 2000, the mean household incomes for Carbon and Yellowstone counties were $32,139 and $36,727, respectively. The mean household income for the State of Montana was $33,024 (U.S. Census Bureau, 2000). The mean household income for Carbon County was slightly lower and that for Yellowstone County was slightly higher than the mean household income for the state. The higher mean household income in Yellowstone County is attributed to Billings, which has higher-paying industries.

3.6.3 Poverty Population

U.S. Census data indicated that the study area has similar low-income populations to the surrounding area at different scales, including the State of Montana, Yellowstone County, and Carbon County. The percentage of low-income populations is shown in Table 3-8. Because the study area is similar to the larger population, the surrounding areas were averaged, and the low-income population is anticipated to represent 7.7 percent of the total population (lower than the state and county averages). No disproportionately high levels of low-income populations were identified through analysis of census data or site visits to the study area.

TABLE 3-8
Low-Income Populations Within and Surrounding the Project Area*

Location	Total Population	Population at or Below Poverty Level	% Poverty
Montana	878,789	128,355	14.6%
Yellowstone County	126,323	14,032	11.1%
Carbon County	9,423	1,089	11.6%
Census Tract 30009000100	2,230	273	12.2%
Census Tract 30111001400	7,174	561	7.8%
Census Tract 30111001600	6,303	373	5.9%
Study Area	15,707	1,207	7.7%

*Source: U.S. CensUS-2000 (CENSUS 2000)

3.7 Pedestrian and Bicycle Considerations

A bicycle and pedestrian plan for the City of Laurel was completed and adopted by the City of Laurel on February 3, 2004 (Cumin, pers. comm., 2006). Cyclists can currently use the shoulder of the PTW while traveling to and from the City of Laurel via the highway bridge.

Riverside Park has an undeveloped trail that travels from the park to the east and crosses private land. The unimproved bicycle/pedestrian trail is one future opportunity recognized by the City of Laurel as part of a trail system that might link to the project area.

The *Yellowstone County and the City of Billings 2003 Growth Policy* states, in general terms, that a separate bicycle path system is generally "unnecessarily expensive" and existing highways, with inexpensive improvements, should be used to serve as the foundation for a bicycle path system. The development of a bicycle/pedestrian path along the new US 212 route would be a long-term benefit to the area as its population grows and it becomes more of a vacation area and a bedroom community to Laurel and Billings (McGann, pers. comm., 2001).

3.8 Air Quality

The U.S. Environmental Protection Agency (EPA) and state environmental agencies have ambient monitoring to measure air quality in various parts of the country. Areas that do not meet the National Ambient Air Quality Standards (NAAQS) are designated as non-attainment areas. Areas meeting NAAQS may be considered as attainment or unclassified areas. EPA requires each state to develop a State Implementation Plan (SIP). The SIP identifies actions to be taken to preserve existing air quality and to prevent further deterioration of air quality in specifically designated areas where the NAAQS have the potential to be exceeded. The only area in or near the project area that the Montana Department of Environmental Quality (MDEQ) and the EPA have designated as a non-attainment area is in the City of Laurel. That area did not meet the NAAQS for sulfur dioxide because of emissions from the Cenex petroleum refinery south of Laurel (see Figure 4-1 in *Chapter 4, Environmental Consequences*).

After reviewing MDEQ documents, it was determined that a circular area with a 2.0-km (1.2-mi) radius centered at the Cenex refinery is the non-attainment area for sulfur dioxide. The corridor of the proposed project is adjacent to this non-attainment area. Sulfur dioxide is not considered a major transportation-related criteria pollutant. In addition to the criteria air pollutants for which there are NAAQS, another 21 air pollutants are regulated by the EPA as mobile source air toxics, and 6 of those pollutants (benzene, formaldehyde, acetaldehyde, diesel particulate matter/diesel exhaust organic gases, acrolein and 1,3-butadiene) are now designated as priority Mobile Source Air Toxics (MSATs). Depending on the type of proposed project and the potential impacts, MSATs may require analysis in NEPA documents. NAAQS have not been established for the six priority MSATs; however, FHWA has developed a tiered approach for analyzing MSATs in NEPA documents. FHWA has determined that projects where the ultimate traffic volume is less than 150,000 AADT

constitute minor widening projects, and the Rockvale to Laurel project falls into this category. A qualitative discussion of MSATs emissions is presented in Chapter 4 of this document.

3.9 Noise

The following section provides information about:

- Noise Terminology
- Noise Abatement Criteria
- Existing Noise Levels

3.9.1 Noise Terminology

Sound, which is quantified using a logarithmic unit called a decibel (dB), is typically modified (weighted) to account for human perception of sound. The A-weighted scale unit, shown as dBA, most closely approximates human hearing. With this scale, zero represents the faintest sound that a person with good hearing can hear.

The FHWA and MDT use a steady-state noise sound level (L_{eq}) to evaluate noise impacts of transportation projects. The steady-state noise sound level, which evens out fluctuating sound over a stated time period (typically 1 hour), is shown as L_{eq}(h).

3.9.2 Noise Abatement Criteria

Land uses along the study area are residential-, agricultural-, commercial-, and railroad-related. Residential land uses are categorized by the FHWA as Category B. The noise abatement criterion for residential land uses is 67 dBA L_{eq}(h).

3.9.3 Existing Noise Levels

Eleven ambient noise level measurements were taken in October 2001 to quantify existing background noise levels. The 11 noise measurement locations (receptors) were distributed throughout the study area along the build alternative routes, as well as along the existing US 212 route (Figure 3-3). For more detailed information about equipment used, weather, and monitoring methodology, the reader should refer to the complete noise report (Big Sky Acoustics, 2002), which is available from MDT.

Table 3-9 displays the ambient noise levels measured in October 2001. The measured L_{eq}(h) at residence #1906 south of the railroad bridge (Measurement Location 4) was 67 dBA. This was the only noise receptor that met the Category B FHWA residential land use noise abatement criteria. The dominant noise source at that location was traffic on US 212.

TABLE 3-9
Measured Ambient L_{eq}(h) Noise Levels (October 2001)

Measurement Location	Date	Time (hours)	Description	Approximate Distance and Direction from Existing US 212 Centerline	US 212 Visible	Measured L_{eq}(h)	Noise Sources During Measurement
1	10/17/01	1704 – 1804	North side of North White Horse Bench Road, near residences #950 and #1101	463 m (1,520 ft)–West	No	45 dBA	Dominant noise source was traffic on US 212. Other sources included dried corn stalks rustling in the wind, commercial jet overhead, cars on White Horse Bench Road, small aircraft overhead, dogs barking in distance, and children playing at #950.
2	10/18/01	0719 – 0819	East side of Byam Road, near residences #251 and #259	152 m (500 ft)–East	Yes	56 dBA	Dominant noise source was traffic on US 212. Other sources included cars on Byam Road, train in distance (not visible), commercial jet in distance, voices at #251, dog barking nearby, and birds chirping.
3	10/18/01	0834 – 0934	North White Horse Bench Road, near residences #3300 and #3355	1,676 m (5,500 ft)–West	No	53 dBA	Dominant noise sources were leaves/trees blowing in the wind and a tractor plowing the field at #3355, with some influence from traffic on US 212. Other sources included small aircraft nearby, commercial jet overhead, and birds chirping.
4	10/18/01	1040 – 1140	Existing US 212, residence #1906 south of railroad bridge	20 m (65 ft)–East	Partially	67 dBA	Dominant noise source was traffic on US 212. Other sources included leaves/trees blowing in wind, trains in distance, car horn, and small aircraft.
5	10/18/01	1317 – 1417	South side of Beartooth View Drive, near residence #3450	29 m (96 ft)–West	Yes	66 dBA	Dominant noise source was traffic on US 212. Other sources included cars on Beartooth View Drive.
6	10/18/01	1508 – 1608	South side of Evergreen Drive, entrance to subdivision	79 m (260 ft)–East	Yes	60 dBA	Dominant noise source was traffic on US 212. Other sources included leaves/trees blowing in wind and cars/trucks on Evergreen Drive.
7	10/18/01	1654 – 1754	Farewell Road, 23 m (75 ft) west of Near West Alternative	157 m (515 ft)–West	Yes	58 dBA	Dominant noise sources were traffic on US 212 and a visible train east of the highway. Other sources included leaves/trees blowing in wind, cars on dirt road, dogs barking in distance, birds chirping, commercial jet overhead, and small plane overhead.

TABLE 3-9
Measured Ambient L_{eq}(h) Noise Levels (October 2001)

Measurement Location	Date	Time (hours)	Description	Approximate Distance and Direction from Existing US 212 Centerline	US 212 Visible	Measured L_{eq}(h)	Noise Sources During Measurement
8	10/19/01	0712 - 0812	North side of South White Horse Bench Road, near residence #2220	829 m (2,720 ft)–West	No	47 dBA	Dominant noise sources were a combination of distant and near sources that included traffic on US 212, train in distance, horses south of road, cars on White Horse Bench Road, birds chirping, and commercial jet overhead.
9	10/19/01	0828 – 0928	Private Road, east of US 212 at Mile Post 48	229 m (750 ft)–East	Yes	53 dBA	Dominant noise source was traffic on US 212. Other sources included birds chirping and a commercial jet nearby.
10	10/19/01	1001 – 1101	Farewell Road, west of residences	524 m (1,720 ft)–West	Partially	48 dBA	Dominant noise source was traffic on US 212. Other sources included horses in distance, train in distance, and cars on Farewell Road.
11	10/19/01	1139 – 1239	End of Rockvale Road, near residence #205	354 m (1,160 ft)–West	Partially	42 dBA	Dominant noise source was traffic on US 212. Other sources included sprinkler at residences, commercial jet in distance, dog barking in distance, cars at residences, and train in distance.

3.10 Water Flow and Quality

The water flow and quality section provides information about:

- Surface Water Flow Rates
- Total Maximum Daily Loads
- 303(d) Listed Water Bodies
- Water Quality Standards
- Source Water Protection
- Domestic Wells
- Groundwater Quality

3.10.1 Surface Water Flow Rates

The gauge station on the Clarks Fork Yellowstone River nearest the project area is located in Edgar, Montana. This gauge station, which is about 6 km (4 mi) south of Rockvale, is approximately 24 km (15 mi) upstream (south) of the mouth of the river. The average annual flow of the Clarks Fork Yellowstone River at Edgar, Montana, for water years 1922 through 2003 was 29 cubic meters per second (cms) (1,031 cubic feet per second [cfs]) (U.S. Geological Survey [USGS], 2003).

The gauge station on the Yellowstone River nearest the project area is located in Billings, Montana. This gauge station is located approximately 26 km (16 mi) downstream (east) of where US 212 crosses the Yellowstone River (at the north end of the project area). The average annual flow of the Yellowstone River at Billings, Montana, for water years 1929 through 2003 was 197 cms (6,951 cfs) (USGS, 2003).

3.10.2 Total Maximum Daily Loads

If a stream or other water body is polluted and can no longer support its beneficial uses, Section 303(d) of the Clean Water Act (CWA) (33 U.S. Code [USC] 1313) requires the state to list the reach as a priority for restoration. An assessment is performed that identifies the amount of pollution a water body can receive without violating state water quality standards. This assessment report is called a Total Maximum Daily Load (TMDL). In other words, the TMDL represents how much "pollutant load" a water body can assimilate. Within a TMDL assessment, threatened water bodies are those that do support beneficial uses, but are in a downward trend, and impaired water bodies are those that do not support beneficial uses. Surface water bodies in the project area have not been assigned TMDLs.

3.10.3 303(d) Listed Water Bodies

The *2006 Montana Integrated 305(b)/303(d) Water Quality Report* (formerly referred to as the 303[d] list) (MDEQ, 2006) describes water quality limited water bodies within the US 212 project area (Table 3-10).

TABLE 3-10
Water Bodies Along US 212 Corridor on the 2006 Montana Integrated Water Quality Report (MDEQ, 2006)

Water body	Estimated Length	Impaired Beneficial Uses	Use Support Level	Probable Cause	Probable Source
Clarks Fork Yellowstone River	66.5 km (41.3 mi)	Aquatic Life Support Cold Water Fishery Drinking Water Swimming Agriculture Industrial Water	Partially Supporting	Flow Alteration Nutrients Suspended Solids Metals Algal Growth/ Chlorophyll a Temperature	Agriculture Hydro-modification Streambank Modification Flow Regulation/ Modification Source of Chlorophyll a unknown

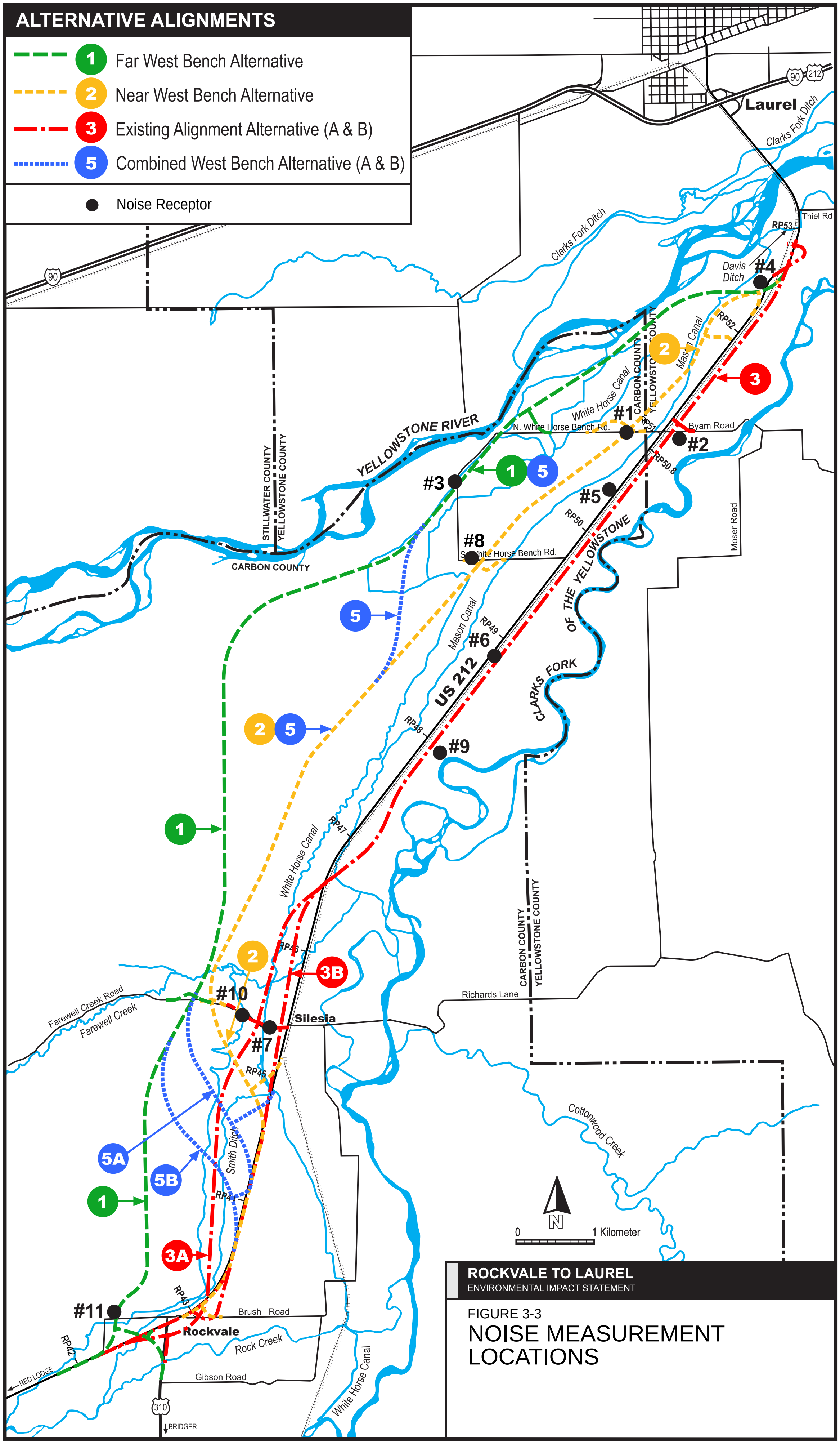
A portion of the Clarks Fork Yellowstone River, within the project area, is listed for partially supporting aquatic life, cold water fishery, swimming, drinking water, agriculture uses, and industrial water supply beneficial uses (MDEQ, 2006). The TMDL for the Clarks Fork Yellowstone River is proposed for the 2008-2012 planning cycle by MDEQ (MDEQ, 2006).

3.10.4 Water Quality Standards

According to the Administrative Rules of Montana (ARM) 17.30.611, the Yellowstone River and Rock Creek have B-1 water use classifications and the Clarks Fork Yellowstone River has a B-2 water use classification. Water bodies designated as B-1 and B-2 are suitable for drinking, culinary, and food processing purposes after conventional treatment; bathing, swimming, and recreation; growth and propagation of salmonid fishes and associated aquatic life, waterfowl, and furbearers; and agricultural and industrial water supply.

Water quality standards for B-1 and B-2 water bodies do not allow violations (outside a set range) of fecal coliform, dissolved oxygen, pH, turbidity, and temperature. In addition, concentrations of sediment, settleable solids, oils, or floating solids cannot be increased above naturally occurring levels. The B-1 and B-2 water quality standards differ from one another in terms of allowable limits for pH variation and turbidity increase, with the B-1 classification being more restrictive than the B-2 classification (ARM 17.30.623 and 624).

The USGS has compiled an extensive amount of water quality data for water bodies in the State of Montana (http://nwis.waterdata.usgs.gov/mt/nwis/qwdata/). The following stations have relevant water quality data for water bodies associated with the US 212 reconstruction corridor: Yellowstone River near Livingston, Yellowstone River at Billings, Clarks Fork Yellowstone River at Edgar, White Horse Canal near Silesia, and Rock Creek near Red Lodge. The data from these sites were included in the development of the *2006 Montana Integrated 305(b)/303(d) Water Quality Report* (MDEQ, 2006) the determination of the beneficial uses of the project area water bodies as described in Table 3-10.



ROCKVALE TO LAUREL
ENVIRONMENTAL IMPACT STATEMENT

FIGURE 3-3
NOISE MEASUREMENT LOCATIONS

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3.10.5 Source Water Protection

The Source Water Protection Program (originally known as the Wellhead Protection Program) applies to public water supplies in Montana. The program is a result of modifications required to meet the 1996 amendments to the Federal Safe Drinking Water Act (42 USC 300f et seq.). As part of the program requirements, public water supplies must prepare and submit source water protection plans to MDEQ for review and certification. The plans submitted should include identification of the source of water used by the public water supply, origins of regulated contaminants within the source water protection area, and assessment of the susceptibility of the public water supply to identified contaminants.

The US 212 corridor contains six public water supplies (Table 3-11) (Montana NRIS, 2006a). Included in the list is the City of Laurel's surface water intake, which is located on the Yellowstone River adjacent to the US 212 bridge crossing.

TABLE 3-11
Public Water Supplies Located within the US 212 Project Corridor

Name	PWSID[a]	Source Name	Source Type	Population
City of Laurel	00270	Yellowstone River	Surface Water	6,200
The River's Edge	01756	Well	Groundwater	100
El Rancho Inn	00742	Spring	Groundwater	65
Rockvale Travel Plaza	03660	Well	Groundwater	225
Quick Stop Drive In	02025	Well	Groundwater	250
Fort Rockvale Restaurant and Lounge	00741	Well	Groundwater	70

[a]Public Water Supply identifier used by MDEQ.
Source: Montana NRIS, 2006a.

As of June 2006, the Fort Rockvale Restaurant and Lounge is the only public water supply in the corridor that has an approved Source Water Protection Plan. Fort Rockvale Restaurant and Lounge is located west of the US 212 Rockvale turnoff in Carbon County (Figure 3-4). For purposes of source water protection, a 305-m (1,000-ft)-radius inventory region has been delineated around the wellhead. The inventory documents water sources and possible contaminants that could flow to the well over a period of years and how to protect the well from contamination. Land use in the vicinity of the wellhead is primarily agricultural irrigated and dryland crop and unsewered commercial. An irrigation ditch (Smith Ditch), which is located a few feet away from the well, is a possible conveyance for pollutants entering the well. The existing right-of-way for US 212 is within 305 m (1,000 ft) of the wellhead.

3.10.6 Domestic Wells

Numerous domestic water wells are located within the US 212 corridor between Rockvale and Laurel. According to the Montana Bureau of Mines and Geology statistical maps, there are between 11 and 100 wells per square mile along the corridor (http://maps2.nris.state.mt.us/mapper/).

The majority of domestic wells in the US 212 corridor are shallow wells completed in alluvial sediments with an average depth of 11 m (35 ft). According to the Montana Bureau of Mines and Geology statistical maps, this shallow alluvial aquifer is designated as a Class I aquifer. The quality of Class I groundwater must be maintained so that the water is suitable for the following beneficial uses with little or no treatment: public and private water supplies; culinary and food processing purposes; irrigation; drinking water for livestock and wildlife; and commercial and industrial purposes. Furthermore, the water quality must be maintained so that the human health standards contained in the Montana Numeric Water Quality Standards, WQB-7, are not violated (MDEQ, 2006).

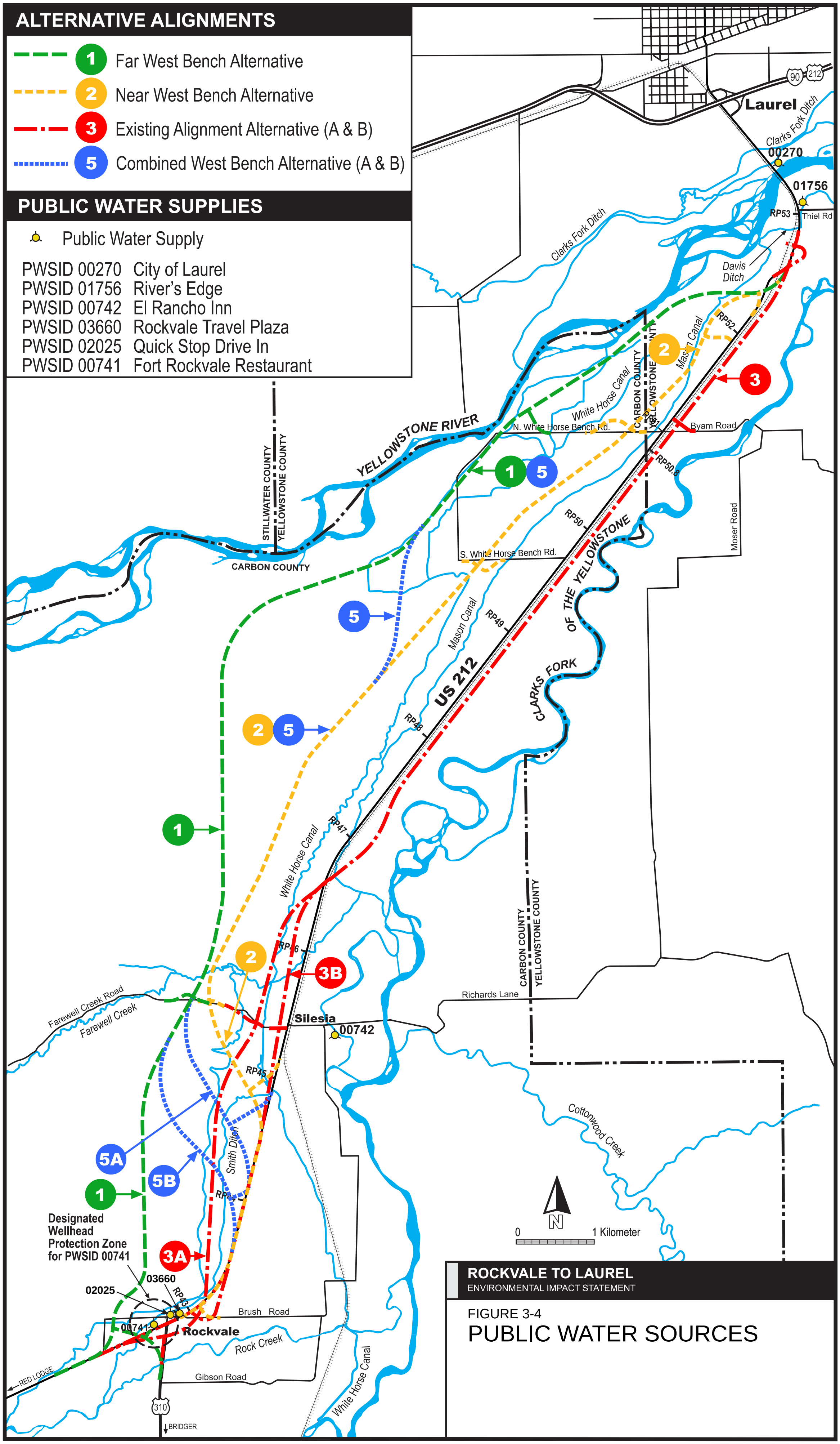
3.10.7 Groundwater Quality

The US 212, project area corridor lies over a shallow, alluvial aquifer that ranges between 3 and 18 m (10 and 60 ft) deep. The aquifer is characterized by unconsolidated clays, silts, sands, and gravels. The distribution of wells within the project area ranges between 1 and 10 wells per square mile, that have waters described as a Class I and Class II for conductivity. Groundwater in Class I could be used for public and private water supplies, while Class II is marginally suitable for public and private water supplies but is acceptable for agricultural and stock supply (Montana Natural Resource Information System [NRIS], 2006b).

3.11 Wetlands

Activities in wetlands are governed by CWA Section 404, E.O. 11990 (*Protection of Wetlands*), and E.O. 11988 (*Floodplain Management*). The U.S. Army Corps of Engineers (COE) is the wetland regulatory agency in Montana. The COE and EPA define wetlands as “Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (COE, 2006). Wetlands meeting this definition (wetland soils, wetland vegetation, and wetland hydrology) are typically considered jurisdictional wetlands by the COE. Rules concerning which wetlands are jurisdictional periodically change based on judicial review; therefore, coordination will continue with COE to ensure wetlands identified as jurisdictional in this document continued to be classified jurisdictional. A COE permit is required for dredge and fill activities in jurisdictional wetlands.

The wetlands section provides information about the delineation of wetlands and wetland and riparian plant communities.



ROCKVALE TO LAUREL
ENVIRONMENTAL IMPACT STATEMENT

FIGURE 3-4
PUBLIC WATER SOURCES

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3.11.1 Delineation of Wetlands

Jurisdictional and non-jurisdictional wetlands within 30.5 m (100 ft) of proposed construction limits along the build alternatives were initially located, mapped, and evaluated using MDT's Montana Wetland Assessment Method (MWAM). MDT and Montana Fish, Wildlife and Parks (MFWP) developed MWAM, which is a combination of several systems (Berglund, 1999). An MWAM functional value rating was calculated for each wetland, which was used to assign an Overall Analysis Rating (Categories I through IV) to each wetland (Table E-2 in Appendix E). The *Operating Procedures for the Conservation of Wetland Resources Associated with Transportation Projects in the State of Montana* (MDT, 1995) was followed during wetland assessment activities.

For the initial analysis, no formal wetland delineations to determine jurisdictional status using the *Wetland Delineation Manual* (COE, 1987) were conducted for the No Build Alternative and the build alternatives. However, COE wetland determination forms were completed for each wetland within the areas potentially affected by the proposed project. The expected jurisdictional status of each wetland and riparian area was estimated and used in assessing the impacts of the build alternatives.

After MDT identified Alternative 5B (preferred) as its Preferred Alternative, a formal wetland delineation using the *Wetland Delineation Manual* (COE, 1987) was conducted for Alternative 5B's potential impact area. As part of the permitting process, the COE will verify this wetland delineation—or the wetland delineation for another build alternative if Alternative 5B is not selected as the Preferred Alternative.

3.11.2 Wetland and Riparian Plant Communities

The existing route of US 212 from Rockvale to Laurel is located entirely on the floodplain of the Clarks Fork Yellowstone River. The quantity and quality of wetland and riparian communities located on the floodplain have been substantially altered by previous highway and railroad construction, agricultural conversion, drainage, and irrigation practices.

The *Biological Resources Report* (CH2M HILL, 2003) presents the results of the wetland analysis. These results are partially summarized in this Draft EIS. Recent COE guidance identifies irrigation canals with a connection to navigable waters as tributaries to those waters, which are therefore under the jurisdiction of CWA Section 404. Based on this recent guidance, the initial wetland analysis has been modified to account for new jurisdictional wetland areas. Twenty-five wetland areas were identified, of which 22 were estimated to be jurisdictional (Table E-2 in Appendix E). The total area of wetlands in the project area is 23.9 ha (59.0 ac). Of the total area, jurisdictional wetlands are 23.8 ha (59.0 ac) and non-jurisdictional wetlands are 0.1 ha (0.5 ac). Wetland locations are shown on Figure 3-5 and detailed in Appendix E, Table E-2. Recent court actions may change jurisdictional status of some of the wetlands identified with this project. As a result, MDT would continue discussions and coordination with the COE throughout the development of the proposed project to ensure proper identification of jurisdictional wetlands.

Wetland and riparian communities that currently exist along the proposed US 212 alignments are supported by six apparent primary water sources that will affect their status with regard to COE jurisdiction under CWA Section 404. Water sources and the likely jurisdictional status of associated wetland types in the project area (to be verified by the COE) include the following:

- **Oxbows of the Clarks Fork Yellowstone River.** Remnant emergent and scrub-shrub wetlands and riparian communities located in old oxbows of the Clarks Fork Yellowstone River that are supported by seasonal high surface and groundwater. These are likely jurisdictional wetlands.
- **Ditches.** Ditch wetland and riparian areas adjacent to US 212 and the railroad tracks are supported by surrounding irrigation, drainage, and seasonally high groundwater. The jurisdictional wetland status would vary depending on location, prior conversion status, and hydrologic connections to the Clarks Fork Yellowstone River or to canals that are tributary to the Clarks Fork Yellowstone River or Rock Creek.
- **Irrigation Water.** Irrigation-supported wetlands supported by direct runoff from adjacent irrigated croplands and pastures and locally high water tables supported by seasonal irrigation. These are likely jurisdictional wetlands if the irrigation water comes from canals that are tributary to the Clarks Fork Yellowstone River or Rock Creek.
- **Canals.** Wetland and riparian areas supported by leaking canals. Those wetlands are likely jurisdictional if the canals are tributary to the Clarks Fork Yellowstone River or Rock Creek.
- **Natural Springs.** Wetland and riparian areas that are supported by natural springs. These are likely jurisdictional wetlands.
- **Rock Creek and Farewell Creek.** Wetland and riparian types that are supported by flows from Rock Creek and Farewell Creek.

3.12 Water Bodies and Aquatic Resources

3.12.1 Water Bodies

The project area contains both natural and constructed water bodies. The proposed US 212 realignments (build alternatives) between Rockvale and Laurel would traverse ditches, canals, and two creeks (Figure 3-6). From south to north, these water bodies are Rock Creek, Dutton Canal, Smith Ditch, Free Silver Ditch, Farewell Creek, White Horse Canal, Mason Canal, and Davis Ditch. Other water bodies that are not directly crossed by the US 212 project, but are adjacent to the project area, include the Yellowstone River and Clarks Fork Yellowstone River. The Smith Ditch, White Horse Canal, Mason Canal, and Davis Ditch are diverted from the Yellowstone River. Free Silver Ditch and Dutton Canal are diverted from the Clarks Fork Yellowstone River. Farewell Creek and Rock Creek are tributaries of the Clarks Fork Yellowstone River. The Clarks Fork Yellowstone River enters the Yellowstone River approximately 3.2 km (2.0 mi) downstream (east) of the US 212 Yellowstone River Bridge.

Current potential impacts to water bodies from highway operations include highway runoff containing residuals from operating automobiles and trucks and, during the winter, runoff containing de-icing salts.

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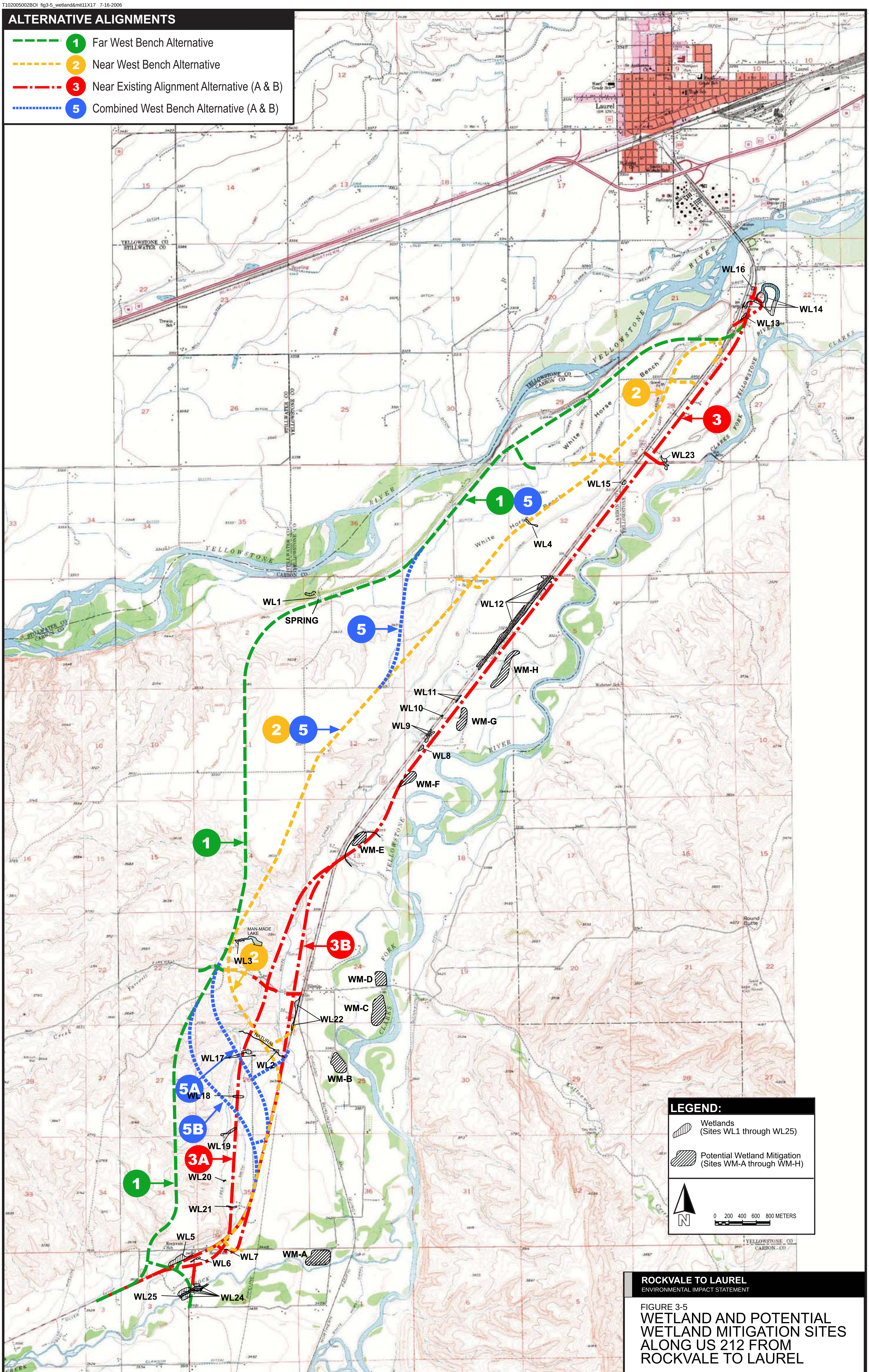

FIGURE 3-5
WETLAND AND POTENTIAL WETLAND MITIGATION SITES ALONG US 212 FROM ROCKVALE TO LAUREL

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3.12.2 Aquatic Resources

Perennial natural water bodies having aquatic resources in the area of the build alternatives include Rock Creek (affected reach and other reaches), the Clarks Fork Yellowstone River, and the Yellowstone River. The affected reach of Rock Creek (that is, from the US 310 bridge at Rockvale downstream to its confluence with the Yellowstone River) is addressed in this analysis. Since the other perennial natural water bodies are not immediately adjacent to the build alternatives and would not be affected by the proposed project, they were not investigated further.

Data on Rock Creek were collected through a site visit and from the Internet-based Montana NRIS (2001b). The current and proposed crossing of Rock Creek by US 310 is approximately 4.8 river km (3 river mi) upstream (west) of this drainage’s confluence with the Clarks Fork Yellowstone River. Observations of Rock Creek at the US 310 bridge on September 25, 2001, indicated creek flow was about 0.11 cms (3.9 cfs), water velocity was 0.3 to 0.6 m (1 to 2 ft) per second, and the creek width varied from 9 to 12 m (29.5 to 39.4 ft).

Instream habitat immediately downstream of the US 310 bridge consisted of two pools separated by a short, quick drop in streambed elevation. Instream habitat immediately upstream of the bridge consisted of a pool/riffle complex. Streambed substrate above and below the bridge consisted primarily of gravels and cobbles about 5 to 15 cm (2 to 5.9 in) in diameter. Substrate appeared to be relatively free of sediment and generally not embedded. A heavy growth of algae on portions of the stream bottom below the bridge indicated nutrient enrichment and adequate sunlight.

The stream banks appeared relatively stable with good vegetative cover, although some riprap was present—probably to guard against the erosive effects of high spring flows. Evidence of bank undercutting was present on the outside bend of the creek below the bridge. A local farmer said that fishing was poor here because of the low flows and warm water, but that it might pick up a bit after the irrigation diversions stop. Broken fishing lines hanging from a wire crossing the creek just below the bridge indicate past angler activity.

Potential fisheries habitat in Rock Creek at the US 310 crossing includes suitable-sized spawning gravels for brown trout (*Salmo trutta*). However, creek flows and water depths in much of the riffles during the site visit did not appear adequate for successful spawning and overwinter egg incubation by this fall-spawning species. The riffles would, however, provide habitat for numerous species of aquatic insects such as stoneflies (*Plecoptera)*, mayflies (*Ephemeroptera*), caddisflies (*Trichoptera*), and true flies (*Diptera*). These insects are important in the diets of juvenile and adult trout (*Salvelinus*), whitefish (*Prosopium*), and other fish species. The pools may provide the most valuable fisheries habitat near the bridge, especially for use as deeper-water cover and overwintering habitat for various life stages of brown trout and other fish species (described further in text that follows). Increased flows later in the fall following the irrigation season may improve the suitability of potential spawning/incubation habitat and overwintering habitat for brown trout near the bridge.

Rock Creek, at about 1.6 km (1 mi) downstream of the US 310 crossing is braided, with habitat consisting primarily of pool/riffle complexes. The potential exists for much better

fisheries habitat at this location at higher flows, the same as was observed upstream at the US 310 crossing.

The downstream-most 29 km (18 mi) of Rock Creek (from its mouth upstream to its confluence with Red Lodge Creek), which includes the US 310 crossing, are classified by the State of Montana as having a “moderate” fishery value and “fair” aesthetics. The lower 66 km (41 mi) of Rock Creek have been identified by MFWP fisheries biologists as a “chronic” dewatering concern area, indicating that dewatering is a significant problem.

Eight species of fish have been reported from the lower 29 km (18 mi) of Rock Creek. They include four species of salmonids—brown trout, rainbow trout (*Oncorhynchus mykiss*), brook trout (*Salvelinus fontinalis*), and mountain whitefish (*Prosopium williamsoni*); two species of suckers—white sucker (*Catostomus commersoni*) and mountain sucker (*Catostomus platyrhynchus*); goldeye (*Hiodon alasoides*); and longnose dace (*Rhinichthys cataractae*). Fish species abundance ranges from abundant (longnose dace, white sucker) to common (brown trout, mountain whitefish) to uncommon (mountain sucker) to rare (brook trout, rainbow trout, and goldeye).

Based on the amount of angler effort expended, the 85-km (52.8-mi) reach of Rock Creek (from its mouth upstream) was the 51st most popular fishing destination in Montana in 2003.

Chronic dewatering of Rock Creek currently occurring near the US 310 bridge crossing would be expected to continue in the future and would have the same limiting effects on aquatic habitat as at present. Aquatic resources are not known to be affected by existing highway operations.

3.13 Vegetation

The vegetation section provides information about plant communities and noxious weeds and other introduced plant species.

3.13.1 Plant Communities

Most native plant communities in the project area have been affected by conversion of the land to dryland agriculture or irrigated pasture; the construction of irrigation ditches, home sites, or businesses; or the development of roadway and railroad rights-of-way. Agricultural uses include irrigated and dry pasture, alfalfa, winter wheat, and fallow land.

The potential natural upland plant community for the proposed project area is blue grama-needlegrass-wheatgrass, of which remnants remain as pasture (Küchler, 1964). Existing native species are mainly blue grama (*Bouteloua gracilis*), needle-and-thread (*Stipa comata*), sego lily (*Calochortus nuttallii*), silver sage (*Artemisia ludoviciana*), soapweed (*Yucca glauca*), wax currant (*Ribes cereum*), and prickly pear cactus (*Opuntia polyacantha*), with some areas of big sagebrush (*Artemisia tridentata*) and bluebunch wheatgrass (*Agropyron*

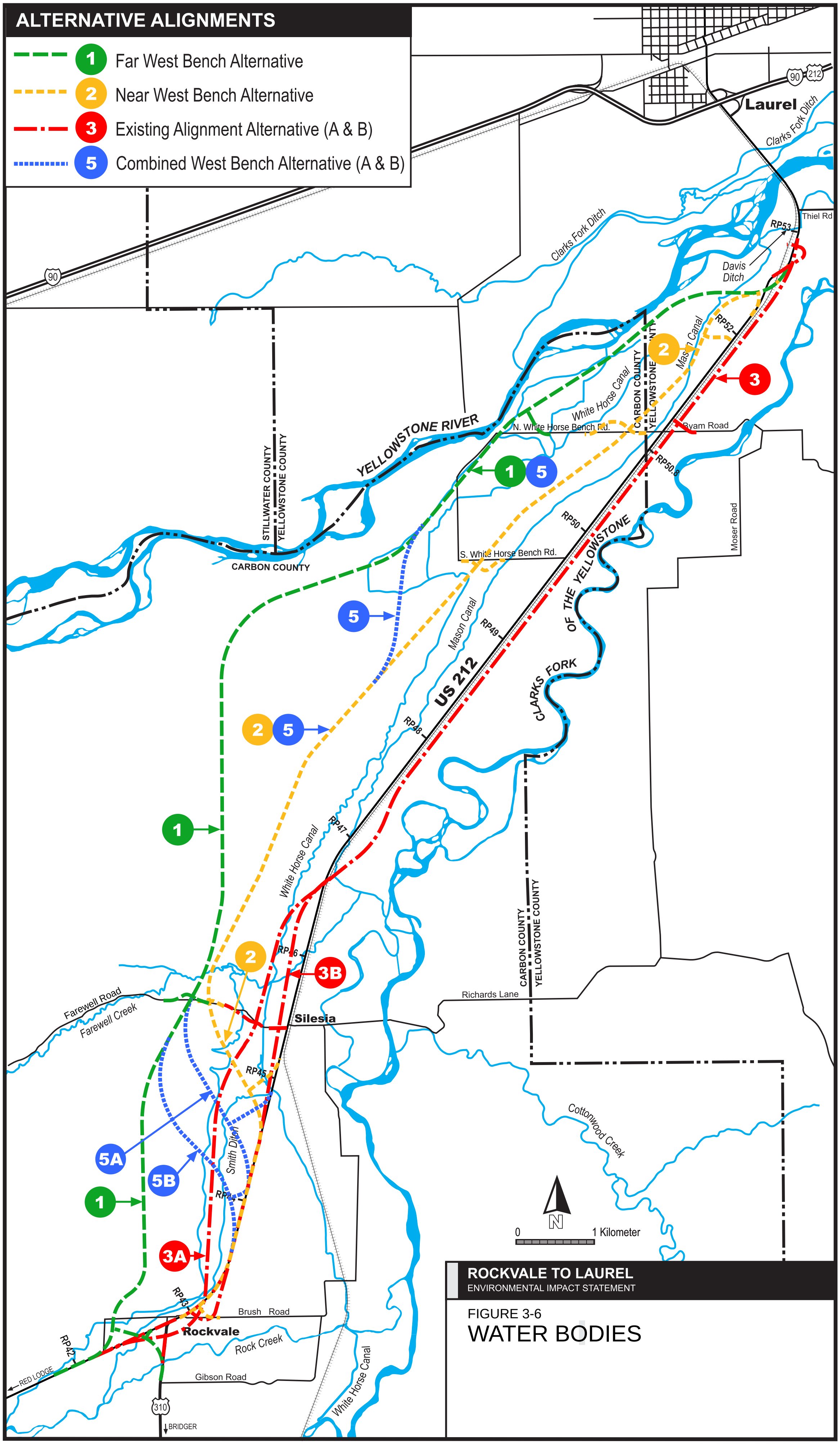

FIGURE 3-6
WATER BODIES

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spicatum). Non-native introduced species account for less than 50 percent of the species in upland grasslands. These mixed stands of native grasses and forbs with non-native species are referred to as Native/Non-Native Vegetated Uplands.

Riparian communities consisting of chokecherry (*Prunus virginiana*), cottonwood (*Populus trichocarpa*), wild rose (*Rosa* species [sp.]), box elder (*Acer negundo*), snowberry (*Symphoricarpos albus*), skunkbush sumac (*Rhus aromatica*), and plains cottonwood (*Populus deltoides* var. *occidentalis*) are found in draws and other topographic depressions. Other native species found on many sites adjacent to wetland areas include milkweed (*Asclepias speciosa*), wild rose, russet buffalo-berry (*Shepherdia canadensis*), snowberry, wild licorice (*Glycyrrhiza lepidota*), hemp dogbane (*Apocynum cannabinum*), foxtail barley (*Hordeum jubatum*), smooth scouringrush (*Equisetum laevigatum*), and sandbar willow (*Salix exigua*). Russian olive (*Elaeagnus angustifolia*) was noted in a few areas. As with uplands, some riparian areas are heavily grazed, which removes understory vegetation and prevents or restricts regeneration of riparian vegetation.

3.13.2 Noxious Weeds and Other Introduced Plant Species

The Montana County Noxious Weed Control Law (MCA 7-22-2101 et seq.) was established in 1948 to protect Montana lands from invasion by exotic plants that may render the land unfit for beneficial uses or that may harm natural plant communities. This law only pertains to a list of legally defined noxious weeds and not to all weeds (that is, only noxious weeds must be controlled by law).

Weeds are capable of adversely affecting native plant communities and wildlife habitat and of impeding the success of mitigation measures and reclamation of sites disturbed during construction. Noxious weeds can spread rapidly and render land unfit or greatly limit beneficial uses of the land. Executive Order 13112 (*Invasive Species*) was signed in 1999 to authorize federal actions to help prevent the establishment and spread of invasive species.

There are three categories of noxious weeds in Montana:

- **Category 1.** Category 1 noxious weeds in Montana are defined as weeds that are currently established and generally widespread in many counties. Management includes awareness and education, containment and suppression of existing infestations, and prevention of new infestations. Category 1 weeds that occur in Carbon County from the county line to Rockvale include Canada thistle (*Cirsium arvense*), spotted knapweed (*Centaurea maculosa*), and field bindweed (*Convolvulus arvensis*) (Weber, pers. comm., 2002). Category 1 weeds that occasionally occur in Yellowstone County within the proposed project's boundary are leafy spurge (*Euphorbia esula*), whitetop (*Cardaria draba*), and spotted knapweed (Bockness, pers. comm., 2002).
- **Category 2.** Category 2 noxious weeds in Montana are those weeds that have recently been introduced into the state or are rapidly spreading from their current infestation sites. Management includes awareness and education, monitoring and containment of known

infestations, and eradication to the extent practicable. In Carbon County, starting at the Yellowstone County Line and going southwest, purple loosestrife (*Lythrum salicaria*) is found in a swampy irrigation drainage ditch on both sides of the present highway (Weber, pers. comm., 2002).

- **Category 3.** Category 3 noxious weeds have either not been detected in Montana or may be found only in small, scattered, localized infestations. Management criteria includes awareness and education, early detection, and immediate action to eradicate infestations. These weeds are known pests in nearby states and are capable of rapid spread, rendering land unfit for beneficial uses. Category 3 noxious weeds include rush skeletonweed (*Chondrilla juncea*).

Non-native species noted on a few sites within the proposed project's rights-of-way include bittersweet nightshade (*Solanum dulcamara*), reed canarygrass (*Phalaris arundinacea*), clasping leaf peppergrass (*Lepidium perfoliatum*), smooth brome (*Bromus inermis*), crested wheatgrass (*Agropyron cristatum*), alfalfa (*Medicago sativa*), Canada thistle, field bindweed, timothy (*Phleum pratense*), bulbous bluegrass (*Poa bulbosa*), downy brome (*Bromus tectorum*), dog fennel (*Anthemis cotula*), and field pennycress (*Thlaspi arvense*). Of these species, Canada thistle, rush skeletonweed, and field bindweed are legally listed as noxious for the State of Montana and must be controlled by law, but the others can be detrimental to native vegetation.

Other non-native plant species in the project area of special concern to the Carbon County Weed Board are common mullein (*Verbascum thapsus*), perennial sowthistle (*Sonchus arvensis*), and night-flowering catchfly (*Silene noctiflora*) (Weber, pers. comm., 2002). The Carbon County Weed Board is also concerned about the spread of two species of native plants: showy milkweed (*Asclepias speciosa*) and wild licorice (Weber, pers. comm., 2002).

3.14 Wildlife Resources

Information concerning the occurrence of wildlife and wildlife habitat along the proposed alignments was collected during three site visits (May, June, and September 2001), from available literature, and during discussions with MFWP wildlife biologists. Wildlife habitat along the alignments has been substantially altered by past and ongoing human activities. A few areas of native vegetation persist, although livestock grazing, which appears to be intensive, has reduced habitat quality in the project area for many years. *Section 3.13, Vegetation*, and *Section 3.11, Wetlands*, describe the plant communities (habitat) occurring in the project area.

The wildlife resources section provides information about:

- Mammals
- Birds, Including Migratory Birds
- Reptiles and Amphibians

3.14.1 Mammals

Big game species that occur in the project area include white-tailed deer (*Odocoileus virginianus*), mule deer (*O. hemionus*), and an occasional moose (*Alces alces*). White-tailed deer occupy the Clarks Fork Yellowstone River valley bottom year-round (Eustace, pers. comm., 2001). Mule deer move from the surrounding uplands into the river valley to forage on green vegetation in pastures and irrigated fields year-round. Deer do not concentrate in high numbers in the project area, particular migration routes have not been identified, and big game winter range has not been classified (Eustace, pers. comm., 2001). Moose occasionally move down the Clarks Fork Yellowstone River or the Yellowstone River into the project area, but are not present regularly.

Other mammals present include coyote (*Canis latrans*), red fox (*Vulpes vulpes*), raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), mink (*Mustela vison*), least weasel (*M. nivalis*), beaver (*Castor canadensis*), muskrat (*Ondatra zibethica*), several species of foraging bats, shrews, other species of small mammals, and rabbits. Mountain lions (*Felis concolor*) may be present in very low numbers, especially during the winter.

3.14.2 Birds, Including Migratory Birds

The Montana Gap Analysis project (MT-GAP) (University of Montana Wildlife Spatial Analysis Lab, 1998) indicates that more than 250 species of birds may occur in the project area. Some are year-round residents, a few migrate south into the planning area during the winter, some breed in the planning area and winter to the south, and many pass through the area during spring and fall migration. Nearly all of these 250 species are protected by the Migratory Bird Treaty Act of 1918 (MBTA), to which the U.S. is a signatory. A substantially smaller number of species are associated with habitats that would be directly or indirectly affected by the build alternatives. Species richness and breeding bird densities are highest in riparian woodlands located along the major rivers, lower in local wetland habitats due to their small size and location in relation to roads and other development, and very low in agricultural lands and remnant native upland grasslands used as pastures.

Common waterfowl and shorebird species include the mallard (*Anas platyrhynchos*), pintail (*A. acuta*), gadwall (*A. strepera*), blue-winged teal (*A. discors*), common merganser (*Mergus merganser*), Canada goose (*Branta canadensis*), killdeer (*Charadrius vociferus*), and American avocet (*Recurvirostra americana*). All of these species are protected by one or more of the MBTA conventions. The Yellowstone River and Clarks Fork Yellowstone River drainages are used heavily for nesting by Canada geese and some species of ducks. Shorebirds forage in flooded and irrigated pastures, especially during spring migration.

Until recently, the largest great blue heron rookery in Montana was located on the Yellowstone River near the project area (Flath, pers. comm., 2001). However, double crested cormorants (*Phalacrocorax auritus*) have begun to occupy these nests and the heron rookery has dispersed. Riparian and emergent wetland communities are important foraging areas for herons.

Red-winged blackbirds (*Agelaius phoeniceus*) and song sparrows (*Melospiza melodia*) are fairly common in emergent wetlands. Cottonwood riparian communities along the rivers would be expected to support the highest species richness and breeding densities of neotropical migrants (Hopkins, 1984). Many of these species have suffered population declines due to the loss of habitat in feeding and wintering areas.

Many of the raptors occurring in the project area have been identified by the State of Montana, U.S. Forest Service (USFS), or U.S. Bureau of Land Management (BLM) as sensitive species or species of special interest or concern (Flath, 1991; Houtcooper et al., 1985). These include a few nesting osprey (*Pandion haliaetus*), Cooper's hawk (*Accipiter cooperii*), northern goshawk (*Accipiter gentilis*), red-tailed hawk (*Buteo jamaicensis*), great horned owl (*Bubo virginianus*), northern harrier (*Circus cyaneus*), sharp-shinned hawk (*Accipiter striatus*), and western screech owl (*Otus kennicottii*). Peregrine and prairie falcons (*Falco peregrinus* and *F. mexicanus*) pass through the area during spring and fall migration (Flath, pers. comm., 2001). The formerly threatened bald eagle (*Haliaeetus leucocephalus*) is discussed in *Section 3.15, Threatened and Endangered Species and State Species of Concern*. Raptors are protected by the MBTA.

Upland game birds that occur in the project area include sharp-tailed grouse (*Tympanuchus phasianellus*), gray partridge (*Perdix perdix*), and a few ring-necked pheasants (*Phasinus colchicus*). Grouse move into the river bottom during severe winters and also forage in wheat fields, along with partridge. Pheasants forage in grain fields and around feedlots and use wetland and shrubby riparian areas for cover.

3.14.3 Reptiles and Amphibians

The MT-GAP (University of Montana Wildlife Spatial Analysis Lab, 1998) indicates that the project area may support one salamander, four frog, four toad, three turtle, two lizard, and nine snake species. MFWP has expressed particular concern about four of these species: spiny softshell (*Trionyx spiniferus*), northern leopard frog (*Rana pipiens*), tiger salamander (*Ambystoma tigrinum*), and western hognose snake (*Heterodon nasicus*). The spiny softshell, western hognose snake, and northern leopard frog are discussed in *Section 3.15.2, State Species of Concern*.

Tiger salamanders can occur wherever the soil is suitable for burrowing and a nearby body of water exists for breeding (University of Montana Wildlife Spatial Analysis Lab, 1998). Wetlands and moist riparian areas located near perennial rivers would likely be most attractive, but emergent wetlands near old river oxbows may also provide suitable habitat. Although not observed, habitat exists for the tiger salamander species.

3.15 Threatened and Endangered Species and State Species of Concern

This section provides information about threatened and endangered wildlife and state species of concern.

3.15.1 Threatened and Endangered Wildlife

The U.S. Fish and Wildlife Service (FWS) website (http://www.fws.gov/montanafieldoffice/), accessed on July 26, 2007, lists three wildlife species protected under the Endangered Species Act (ESA) potentially occurring in the proposed project's vicinity in Carbon County (see *Appendix B* for the species information). Federally listed species include the endangered black-footed ferret (*Mustella nigripes*), the threatened Canada lynx (*Lynx canadensis)*, and the experimental, non-essential population of the gray wolf (*Canis lupus).* The bald eagle was removed from the list of threatened species on August 8, 2007, because it was determined to have recovered from threatened status. Bald eagles are discussed in *Section 3.15.2.* The USFWS letter listing threatened and endangered species that may occur in the project vicinity dated September 11, 2007, included the endangered whooping crane (*Grus americana*), which had not been noted in previous correspondence.

3.15.1.1 Black-Footed Ferret

Historically, black-footed ferrets inhabited grassland plains (shortgrass and midgrass prairies) surrounded by mountain basins approximately 3,250 m (10,663 ft) in elevation (FWS, 1998). This species is always found in association with another grassland species, the prairie dog (*Cynomys* spp.) (Burt and Grossenheider, 1980; Cahalane, 1954). Prairie dogs are the principal food of the black-footed ferret, and prairie dog burrows provide the ferret's principal shelter, as they do not dig their own burrows (Anderson et al., 1986; Biggins et al., 1986; Clark et al., 1982; Forrest et al.; 1988; Hillman, 1968; Miller et al., 1996). Data suggest that a ferret needs a prairie dog colony of at least 12.5 ha (30.9 ac) to survive for 1 year and a minimum of 50 ha (123.5 ac) to raise a litter (Caughley and Gunn, 1996). Ferret range is coincident with that of prairie dogs (Anderson et al., 1986). The breeding of black-footed ferrets outside of prairie dog colonies has not been documented. Specimen records of black-footed ferrets are available from ranges of three species of prairie dogs: the black-tailed prairie dog *(Cynomys ludovicianus)*, white-tailed prairie dog (*C. leucurus*), and Gunnison's prairie dog (*C. gunnisoni*) (Anderson et al., 1986).

Ferrets have been decimated from their former range, and distribution is now limited to introduced populations in Arizona, Wyoming, Montana, and South Dakota (FWS, 1998). Reintroduction efforts have been concentrated in these four states because they still have protected areas with large prairie dog colonies. Although the Wyoming effort has been hampered by disease problems, the other three states have shown some success (FWS, 1996). Reintroduction efforts were conducted in Wyoming from 1991 to 1994, Montana from 1994 to 1996, South Dakota from 1994 to 1996, and Arizona in 1996. Ferrets have not been introduced in the vicinity of the proposed project and they are not known to occur in the project area.

3.15.1.2 Canada Lynx

According to the Lynx Conservation Assessment and Strategy (Ruediger et al., 2000), lynx occur in mesic coniferous forests that have cold, snowy winters and provide a prey base of

snowshoe. Both snow conditions and vegetation type are important factors to consider in defining lynx habitat. Most lynx occurrences (83 percent) were associated with Rocky Mountain conifer forest, and most (77 percent) were within the 1,500- to 2,000-m (4,920- to 6,5600-foot) elevation zone. Primary vegetation that contributes to lynx habitat is lodgepole pine, subalpine fir, and Engelmann spruce. None of these habitats occur within or near the project area and lynx would not be expected to occur in the area.

3.15.1.3 Gray Wolf

The FWS reintroduced gray wolves into Yellowstone National Park and central Idaho in 1995 and 1996. The reintroduction was successful, and the recovery goals for this population have been exceeded. By December 2006, there were about 1,100 wolves in the Yellowstone area and Idaho; in total, at least 1,240 live in the northern Rocky Mountains of Montana, Idaho, and Wyoming. Because of the success of these reintroductions, the FWS has proposed removal of the gray wolf in the northern Rocky Mountains from the threatened and endangered species list. The project area is located within the Greater Yellowstone recovery area and any wolves in this area are considered to be part of an experimental, non-essential population. The nearest reported wolf pack is located about 15 miles to the west of the project area near Roscoe, Montana (http://fwp.mt.gov/content/10923,800,517.jpg).

The gray wolf has no particular habitat preference and is highly adaptable to a variety of habitats. The gray wolf requires areas with low human population, low road density, and high prey density (ideally large, wild ungulates). Wolves are good hunters and wide-ranging predators. Gray wolves prefer to hunt ungulates, but when ungulate populations are low or seasonally unavailable, wolves are also known to eat beaver, snowshoe hare, rodents, and carrion. Wolves are not known to occur in the immediate project area. The project area does not support large ungulate herds and has relatively high levels of human activity. While occasional wolves may move through the area, it is very unlikely that a pack would establish in the project area.

3.15.1.3 Whooping Crane

The USFWS reported the reliable sighting in 2005 of a pair of adult whooping cranes along the Yellowstone River about 4 miles southwest of Laurel and about 1.5 miles west of the project area. There have been no reported observations in the Clark Fork of the Yellowstone River drainage, where the project is located.

About 145 whooping cranes migrate across Montana from Wood Buffalo National Park in northeastern Alberta and southern Northwest Territories to the Aransas National Wildlife Refuge on the gulf coast of Texas. Their main migration route is through the central Great Plains, mostly the Dakotas and extreme northeast Montana, and then down through Nebraska and Kansas to Texas (www.fws.gov/medicinelake/Press/whooping%20crane%20Oct%202003.pdf).

Whooping cranes are occasionally sighted in southwestern Montana’s Centennial Valley and in the extreme northeast corner of the state near Medicine Lake National Wildlife Refuge (http://nhp.nris.mt.gov/mbd/ and (http://www.mt.nrcs.usda.gov/news/factsheets/whoopingcrane.html). Many of the confirmed

sightings are from eastern and especially northeastern Montana (http://www.npwrc.usgs.gov/resource/birds/wcdata/mt_fig1.htm). The Montana Bird Distribution Database (http://nhp.nris.mt.gov/mbd/runQuery.asp?) also shows observations concentrated in northeastern Montana with other occasional occurrences in the southeast and southwest parts of the state.

Whooping cranes prefer sites with minimal human disturbance (Clark et al. 1989). They inhabit shallow wetlands that are characterized by cattails, bulrushes, and sedges and stop on wetlands, river bottoms, and agricultural lands along their migration route (Reel et al. 1989). They can also be found in upland areas, especially during migration. Observations of individual whooping cranes in other areas of Montana outside of the national wildlife refuges include grain and stubble fields as well as wet meadows, wet prairie habitat, and freshwater marshes that are usually shallow and broad with safe roosting sites and nearby foraging opportunities (http://fwp.mt.gov/fieldguide/detail_ABNMK01030.aspx). Loss of habitat and shooting are the main reasons for the whooping crane's decline.

3.15.2 State Species of Concern

The Montana Natural Heritage Program (MNHP) and Montana Fish Wildlife and Parks (2006) lists 13 Montana Species of Concern that may occur in or near the project area. These include the bald eagle, peregrine falcon, mountain plover (*Charadrius montanus*), Baird's sparrow (*Ammodramus bairdii*), greater sage-grouse (*Centrocercus urophasianus*), barn owl (*Tyto alba*), black-tailed prairie dog, milk snake (*Lampropeltis triangulum*), spiny softshell, northern leopard frog, western hognose snake, Yellowstone cutthroat trout (*Oncorhynchus clarki bouvieri*), Drummond's hemicarpha (*Hemicarpha drummondii*), and swamp milkweed (*Asclepias incarnata*).

The MNHP searched their database for occurrences of these species in the project vicinity during July 2007. Because the MNHP database only includes information about known occurrences, it only reflects where surveys have been conducted or observations made for a particular species and where the findings have been reported to the MNHP. The letter from the MNHP conveying the database search results states: "The results of a data search by the Montana Natural Heritage Program reflect the current status of our data collection efforts. These results are not intended as a final statement on sensitive species within a given area, or as a substitute for on-site surveys, which may be required for environmental assessments. The information is intended for project screening only with respect to species of concern, and not as a determination of environmental impacts, which should be gained in consultation with appropriate agencies and authorities." The MNHP database search results are included in Appendix B and are summarized below:

- **Bald Eagle.** The final rule to delist the bald eagle from protection under the Endangered Species Act was published in the Federal Register on July 12, 2007 (USFWS, 2007a). The rule took effect on August 8, 2007. The bald eagle will continue to be protected by two other federal laws: the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. Both laws prohibit killing, selling, or otherwise harming eagles, their nests, or

eggs. Management of bald eagles under these acts is described in the National Bale Eagle Management Guidelines (USFWS 2007b).

The MFWP confirmed the presence of bald eagles in the proposed project's vicinity (Flath, pers. comm., 2001). Bald eagles use the Yellowstone River and the Clarks Fork Yellowstone River during spring and fall migrations and during the winter. Peak numbers of bald eagles are present during the winter from November through April. There is a bald eagle nest along the Clarks Fork Yellowstone River near Silesia, and four to five eagles typically winter in that general area and near the mouth of Rock Creek. The MNHP database search also indicated a bald eagle about 1.5 miles to the southeast of Rockvale. No additional details regarding this occurrence were provided. MFWP was not aware of any regularly used winter roosts in the vicinity of the project area (Flath, pers. comm., 2001). Bald eagles perch and forage for fish and waterfowl along the Clarks Fork Yellowstone River. There are also active eagle nests on the Yellowstone River about 6.4 km (2.9 mi) east and 9.7 km (6 mi) west of the project area. The MNHP database (http://nhp.nris.state.mt.us/animal/index.asp) also indicates breeding activity within the latitude-longitude coordinates that encompass the project area.

- **Peregrine Falcon.** Peregrine falcons were recently delisted under the ESA. However, they are still protected by several international migratory bird treaties. Peregrine falcons migrate through the general project area during the spring and fall, but none are known to nest in the vicinity (Flath, pers. comm., 2001). Peregrine falcons are attracted to wetlands and rivers where waterfowl and shorebirds, their primary prey, may congregate. It is unlikely that peregrine falcons would be adversely affected by the proposed project because relatively few hectares of emergent wetlands would be impacted. Impacted emergent wetlands are mostly located near the existing US 212 alignment and the railroad, where existing levels of human activity probably deter foraging by peregrine falcons.
- **Mountain Plover.** Mountain plover habitat is grasslands and it has historically been associated with bison, pronghorn, and burrowing rodents, including prairie dog towns. In Montana, the primary habitats for mountain plover are high, relatively level arid plains and shortgrass prairie with blue grama and buffalo grass (*Buchloe dactyloides*), and prickly pear cactus (Graul, 1975; Fisher et al., 1998). The MNHP website (http://nhp.nris.state.mt.us/animal/index.asp) shows the known distribution of breeding, wintering, and migration areas for many of the birds of Montana. The database does not show occurrences of mountain plovers within the latitude-longitude that includes the project area, although suitable habitat is present. Given the lack of recent occurrences in the proposed project's vicinity, the lack of observations during field work, the lack of observations since records were established by the MNHP in 1985, the lack of prairie dog towns, and the low quality of the upland habitat for mountain plovers (*Charadrius montanus*), it appears unlikely that mountain plovers use the project area.
- **Baird's Sparrow**. The MNHP database search indicated a record of the Baird's sparrow about 1.5 miles to the east of the project area and just east of the Clarks Fork of the Yellowstone River. Baird's sparrows breed in mixed grass native prairie and forbs without excessive grass litter or heavy brush. Some hayfields or pastures may support Baird's sparrows where native grasses occur in sufficient quantity, but generally,

cultivated land is far inferior habitat relative to true prairie. Their range extends from eastern and central Montana and northern South Dakota north to the Canadian provinces of Alberta, Saskatchewan, and Manitoba. The project area is on the edge of this sparrow's range. The project area includes upland habitat with both native and non-native vegetation but does not include native mixed grass prairie. These mixed stands of native grasses and forbs with non-native species, referred to as Native/Non-Native Vegetated Uplands, do not provide preferred nesting habitat for Baird's sparrows. However, use of portions of the project area by this species is possible.

- **Greater Sage-Grouse**. The MNHP database search results indicated two occurrences of greater sage-grouse about 3 to 8 miles to the east of Rockvale. No details regarding these occurrences are available. Connelly et al. (2004) described greater sage-grouse habitat requirements as follows: "Greater sage-grouse depend on sagebrush (*Artemisia* spp.) for much of their annual food and cover. This close relationship is reflected in the North American distribution of sage-grouse, which is closely aligned with sagebrush, and in particular big sagebrush (*A. tridentata*) and silver sagebrush (*A. cana*). This relationship is perhaps tightest in the late autumn, winter, and early spring when sage-grouse are dependent on sagebrush for both food and cover. However, sage-grouse also depend on sagebrush at other times of year, primarily for protective cover, such as for nests during the breeding season. Other habitat characteristics may be less overtly important than sagebrush, but may be nearly as important. For example, herbaceous cover may provide both food and cover during the nesting and early brood-rearing seasons, thus playing a major role in the population dynamics of sage-grouse." The project area includes a few small remnant stands of sagebrush but does not include the large expanses of sagebrush required by this species. Also, human disturbance levels in the vicinity of the project area are too high for sage-grouse and this species is not expected to occur in the area.

- **Barn Owl.** The MNHP database search results indicated a barn owl occurrence about 3 miles southwest of Rockvale. Barn owls are found in open grass-like habitats such as grasslands, deserts, wet meadows, marshes, lightly grazed pastures, hayfields, and abandoned agriculture fields. They nest in hollow trees, cliff cavities, and in human-made cavities including barns, silos, church steeples, warehouses, and grain elevators. Juveniles are known to disperse long distances from the nest site and may move through the project area.

- **Black-Tailed Prairie Dog.** Black-tailed prairie dogs inhabit dry, upland prairies and grasslands (Burt and Grossenheider, 1980). They are considered to be typical of Plains-Mesa Grasslands (Frey and Yates, 1996). Historically, colonies were often found even in marginal habitat, such as open woodlands and semi-desert areas (Findley et al., 1975). Black-tailed prairie dogs are capable of colonizing a variety of shrub-grassland and grassland habitats. Generally, the most frequently used habitats in Montana are dominated by western wheatgrass (*Agropyron smithii*), blue grama, and big sagebrush, and located in relatively level areas in wide valley bottoms, rolling prairies, and the tops of broad ridges (Knowles, 1982). The black-tailed prairie dog is considered to be a critical link (keystone) species because it provides critical habitat or habitat elements to a host of other species (Agnew et al., 1986; Finch, 1992; Kotliar et al., 1999; Miller et al., 1994; Reading et al., 1989). Although the original abundance of prairie dogs in Montana is unknown, early accounts indicate they were widely distributed east of the Continental

Divide in grasslands and sagebrush-grasslands habitats (Cooper, 1869a; Cooper, 1869b; Coues, 1878; Hoffman and Pattie, 1968). Black-tailed prairie dogs have not been observed in the project area and abandoned prairie dog towns were not discovered.

- **Milk Snake.** Milk snakes occur in suitable habitats throughout south-central and southeastern Montana. Preferred habitats include sandstone bluffs, rock outcrops, grasslands, river bottoms, farmland, and open ponderosa pine and juniper stands (Stebbins, 1966; Hendricks and Reichel, 1996). Suitable habitat is found throughout the project area, but individual milk snakes have not been observed or reported. The MNHP database search results indicated a milk snake occurrence about 7 miles west of Silesia.

- **Spiny Softshell.** The spiny softshell is a turtle that occurs primarily in the larger rivers of southeastern Montana. It is found in well-oxygenated, slow-moving water with nearby mud flats and sandbars, and occasionally in backwater sloughs (University of Montana Wildlife Spatial Analysis Lab, 1998). They may be found approximately 50 m (164 ft) from permanent water and occasionally occupy temporary water such as irrigation canals and drains. Spiny softshells are active from April through September. The best habitat in the project area is the Clarks Fork Yellowstone River, with less desirable habitat in Rock Creek and scattered wetlands and canals throughout the project area. Individual spiny softshells have not been reported in the project area.

- **Northern Leopard Frog.** Northern leopard frogs have declined substantially in western, and to a somewhat lesser extent, central Montana (University of Montana Wildlife Spatial Analysis Lab, 1998). Northern leopard frogs are associated with permanent, slow-moving water bodies with considerable riparian vegetation, but may also range into moist meadows and grassy woodlands and occasionally agricultural areas (Nussbaum et al., 1983). Although not observed, wetland habitat exists for northern leopard frogs in the project area.

- **Western Hognose Snake.** The western hognose snake occurs in a variety of habitats associated with arid areas, prairie grasslands and shrublands, and floodplains with gravely or sandy soils (Reichel and Flath, 1995). Although not observed, habitat exists for western hognose snakes in the project area.

- **Yellowstone Cutthroat Trout.** Yellowstone cutthroat trout have been reported in Rock Creek between River km 80 and 112 (River mi 50 and 69). However, because this species is typically associated with higher elevation headwater areas, Yellowstone cutthroat trout generally would not be expected to use lower reaches of Rock Creek in the vicinity of the US 310 bridge crossing.

- **Drummond's Hemicarpha.** Drummond's hemicarpha prefers moist, sandy soil along rivers and streams in the valley. This plant has potential to occur in the project area and searches for it or its habitat were conducted in wet areas. The MNHP database search results indicated an occurrence of Drummond's hemicarpha a few miles southwest of Rockvale. Since the only suitable habitat in the project area is the Clarks Fork Yellowstone River, Drummond's hemicarpha habitat is not affected by the proposed project.

- **Swamp Milkweed.** Swamp milkweed is another plant species that prefers wet meadows and thickets, but is not expected to occur in the project area. Searches were conducted for swamp milkweed because CH2M HILL encountered milkweed in the project area and

wanted to ensure that it was not the swamp milkweed species. This species was not found during field surveys conducted from June 11 to 15, 2001.

3.16 Floodplains

A 100-year floodplain is defined as the area covered by water from a 100-year flood (a flood event that has a 1 percent chance in any year or a probability of occurring once every 100 years). The Yellowstone River, the Clarks Fork Yellowstone River, and Rock Creek are the three rivers with 100-year floodplains that lie within or immediately adjacent to the project area.

The Yellowstone River flows from west to east, while the Clarks Fork Yellowstone River flows from south to north. The floodplains of the Yellowstone River and the Clarks Fork Yellowstone River merge just southeast of the City of Laurel. The Yellowstone River borders the proposed project on the northwest and the Clarks Fork Yellowstone River borders the proposed project on the east. Rock Creek, which is a major tributary of the Clarks Fork Yellowstone River, borders the south edge of the project area. Each build alternative would encroach upon the 100-year floodplains of the three rivers. Alternative 1 would also include a bridge over Rock Creek.

These floodplains in the project area are covered by the Flood Insurance Rate Maps (FIRM) from the Federal Emergency Management Agency (FEMA) or Floodway Maps (see Figure 4-2). The 100-year floodplain displayed on each FIRM is determined by approximate methods without detailed hydraulic analysis. The 100-year water surface elevations displayed on the Floodway Maps were derived from detailed hydraulic analyses and are shown at selected intervals. The roadway sections located within Yellowstone County are covered by Yellowstone County Floodway Maps 300142 1135 and 300142 1135 and Yellowstone County FIRM Maps 300142 1135B and 300142 1135B. The Rock Creek crossing associated with Alternative 1 is covered by Carbon County Floodway Map 300139 0110 and Carbon County FIRM Map 300139 0110B. The most southern end of Alternative 3A is covered by Carbon County Floodway Maps 300139 0110 and 300139 0130 and Carbon County FIRM Maps 300139 0110B and 300139 0130B.

The floodplains in the project area are protected by state and local floodplain standards. The state floodplain coordinator was contacted regarding these standards. Applicable procedures and regulations are provided in *Section 4.16, Floodplains*.

3.17 Cultural Resources

The cultural resources section provides information about:

- Regulatory Guidelines
- Research Methodology
- Resource Inventory
- Site Descriptions

3.17.1 Regulatory Guidelines

Cultural resources are defined in Section 301 of the National Historic Preservation Act (NHPA) of 1966, as amended, as “any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in the National Register of Historic Places” (16 USC 470W). Established criteria are used to determine if a cultural resource is eligible for listing on the National Register of Historic Places (NRHP). A property must be important in American history, architecture, archaeology, engineering, or culture; it must also possess integrity of location, design, setting, materials, workmanship, feeling, and association; and it must meet one of the following criteria:

- **Criterion A.** Properties that are associated with events that have made a significant contribution to the broad patterns of history.
- **Criterion B.** Properties that are associated with the lives of persons significant in our past.
- **Criterion C.** Properties that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction.
- **Criterion D.** Properties that have yielded, or may be likely to yield, information important to prehistory or history.

3.17.2 Research Methodology

The cultural resources inventory for the proposed project’s corridor was conducted in compliance with federal guidelines, including Sections 106 and 110 of the NHPA and regulations in 36 CFR 800. Cultural resources were identified that are on, or eligible for listing on, the NRHP. Both record searches and field inventories were employed during this analysis.

Cultural reports were obtained from the Montana State Historic Preservation Office (SHPO) and records were obtained from the General Land Office (GLO) to identify the presence of historic trails, site leads, or NRHP-eligible sites. A search of files indicated that nine prior projects were located in the vicinity of the project area. Those projects had identified multiple cultural sites. However, the prior projects had identified only one “eligible” site located within the project area—the Free Silver Ditch (24CB1287). Evaluation related to another project had determined that the Free Silver Ditch site was eligible for the NRHP under Criterion A.

The area of potential effect was limited to existing and additional rights-of-way that might be acquired or used to construct the build alternatives. Field inventories were conducted in the area of potential effect. Ethnoscience (2001) conducted a cultural resource survey on the area of potential effect (available at MDT). Each site in that report is referenced by a site number. Each site might have more than one cultural or historic feature. The addition of

Alternative 5A and Alternative 5B (preferred) required an additional cultural resources survey, which was conducted in November 2002 (Ethnoscience, 2002).

3.17.3 Resource Inventory

The Free Silver Ditch (24CB1287) and the Rocky Fork Branch of the Northern Pacific Railroad (24CB1283/24YL1533) are eligible for the NRHP under Criterion A. An historic farm house on the Nutting Farmstead (24CB1642) is eligible for the NRHP under Criterion C.

Table 3-12 summarizes the cultural sites with known, recommended, or potential NRHP eligibility that were identified during the cultural resources inventory of the project area. An untested archeological site (24CB1642) was located near Alternative 5B’s alignment. It was tested and determined to not be eligible for listing on the National Register. A letter to that effect was sent to SHPO on May 5, 2003. SHPO concurred on May 8, 2003. Part II of this DEIS contains the correspondence.

TABLE 3-12
Summary of Sites Identified during the Rockvale to Laurel Cultural Resources Inventory

Site Number	Description	NRHP Eligibility
24CB1283/24YL1533	Rocky Fork Branch of the Northern Pacific Railroad	Recommended Eligible, Criterion A
24CB1287	Free Silver Ditch	Eligible, Criterion A
24CB1642	Main House of Nutting Farmstead	Recommended Eligible, Criterion C

Sources: Ethnoscience, 2001 and 2002.

3.17.4 Site Descriptions

The following list describes the sites identified during the cultural resources inventory of the project area.

- **Rocky Fork Branch of the Northern Pacific Railroad (24CB1283/24YL1533).** The portion of this site in the project area consists of a single, standard-gauge railroad track. The site is eligible for NRHP listing under Criterion A because of its significance to the settlement and economic and transportation development of the region.
- **Free Silver Ditch (24CB1287).** The Free Silver Ditch, which was constructed in 1893, diverts water from Rock Creek. It is approximately 14.5 km (9 mi) in length. The site is eligible for NRHP listing under Criterion A because of its association with the development of irrigation in southeastern central Montana and its contribution to the success of the agricultural productivity of the local area.
- **Main House of the Nutting Farmstead (24CB1642).** This farmstead, which was settled in the 1900s, consists of 2 houses (constructed in 1903 and 1910) and 11 outbuildings.

The main house, built in 1903, is eligible for NRHP listing under Criterion C because it is a unique example of the vernacular Craftsman-style architecture for this region and exhibits significance of design and construction. The other features of the farmstead are not recommended for listing because they are not important at the national, regional, or local level; have not been associated with historically significant person(s); do not have architectural significance; and cannot potentially yield further information about the people who lived on the property or about the general lifestyle of the period when it was occupied.

3.18 Hazardous Materials

The hazardous materials section provides information about the investigation and the sites potentially containing hazardous materials.

3.18.1 Investigation

Several methods were used to survey for hazardous materials in the project area. These methods included walking and/or driving each proposed alignment, obtaining a VISTA Site Assessment report, and communicating with property owners and State of Montana representatives. The investigation included coordination and data searches involving the following organizations: the Environmental Clean-up Group with the Montana Rail Link; the Enforcement Division of the MDEQ; and the Montana Disaster and Emergency Services. In addition, the National Response Center Public Report Database (http://www.nrc.uscg.mil/report.html) was queried by county name (Yellowstone County and Carbon County).

3.18.2 Sites Potentially Containing Hazardous Materials

During the hazardous waste survey, North Wind Environmental, Inc. identified sites within the project area that might contain hazardous materials (2001). These sites include the following:

- Small waste collection areas (often referred to as “waste dumps”). Multiple private land holdings scattered throughout the project area have such waste collection areas. The waste collection areas may contain only items commonly found in waste sites. However, it is possible that they contain contaminants such as household chemicals, fertilizers, and oils and lubricants that could contaminate soil.
- Dwellings built before the use of lead-based paints and asbestos was discontinued have the potential for lead and asbestos contamination.
- Aboveground storage tanks (ASTs) that are commonly used for propane storage. Several landowners have ASTs.
- While not observed, some dwellings to be relocated may have underground storage tanks (USTs) used to hold heating oil or other liquids used in farming.

- A railroad tie salvage business.
- Several utility transformers.
- The electrical substation in Silesia owned by the Yellowstone Valley Electric Co-Op.

3.19 Visual Resources

A visual and aesthetic resources report was performed on the project area using the recommendations outlined in FHWA's *Visual Impact Assessment for Highway Projects* (1988). The *Visual Resources Report* (Fischer and Associates, 2003) prepared for the proposed project addresses the visual quality of the study area (affected environment) and the visual impacts (environmental consequences) associated with each of the proposed alternatives. Visual characteristics were identified for the highway user and for viewer groups situated along the proposed project.

The following sections summarize the *Visual Resources Report*:

- Existing Visual Characteristics
- Landscape Units
- Visually Sensitive Resources

For more detailed information, please refer to the report (Fischer and Associates, 2003).

3.19.1 Existing Visual Characteristics

The existing and proposed US 212 corridors are located in the Rocky Mountain foreland subregion of the Great Plains Region, as classified by the USDA. The landscape in the project area consists of plateaus, hills, plains, small creeks, canals, drainages, and isolated mountain outcroppings, including the Beartooth Mountain Range visible in the distance. The Yellowstone River and Clarks Fork Yellowstone River have riparian vegetation that forms strong lines in the landscape. The drier foothills and higher plateaus have been heavily grazed. Dryland farming occurs on the West Bench.

The prominence of the ridgelines and plateaus decreases as one travels north. The valley bottoms are colorful because of irrigated crops and wetland vegetation. The green vegetation abruptly transitions to dry hillsides and eroded slopes on either side of the river valley. Development along most of the proposed corridors is scattered and sparse. Railroad tracks parallel the existing highway from Silesia north to Laurel.

3.19.2 Landscape Units

FHWA defines landscape units as "outdoor rooms," often corresponding to places or districts that are already named. Units are enclosed by clear landform or land cover boundaries. A landscape unit is perceived as a complete visual environment, while a landscape type is generally perceived as part of that environment. The study area generally contains four

landscape units including the Clarks Fork Yellowstone River valley, the Yellowstone River valley, the West Bench (plateau), and the eastern prairie uplands (Figure 3-7). At the southern end of the study area, a sub unit, the Rock Creek drainage, parallels the existing highway.

An open, elevated plateau situated between the two river valleys characterizes the West Bench. Several irrigation ditches and canals are located below the ridge, further defining the landscape units. The eastern prairie rises gently from the Clarks Fork Yellowstone River valley, with higher and more pronounced landforms near the southern end.

The *Visual Resources Report* (Fischer and Associates, 2003) provides a list of inventoried visual resources and the respective pattern elements and pattern character. The report supports the findings that landforms and vegetation exhibit the greatest dominance and scale of the resources present. The continuity of the river and vegetation are moderately prominent. Except along the existing highway corridor, development is the least prominent of the landscape resources.

3.19.3 Visually Sensitive Resources

Only a few resources in the project area might be classified as visually sensitive. The most significant of these are views of the Yellowstone River and its tributaries and the distant views of the Beartooth Mountain Range. Farming and grazing have modified most of the natural landscape. However, the simplicity and undeveloped character of the agrarian landscape is a visual resource to be recognized. This section provides information about affected viewers and the existing visual quality.

3.19.3.1 Affected Viewers

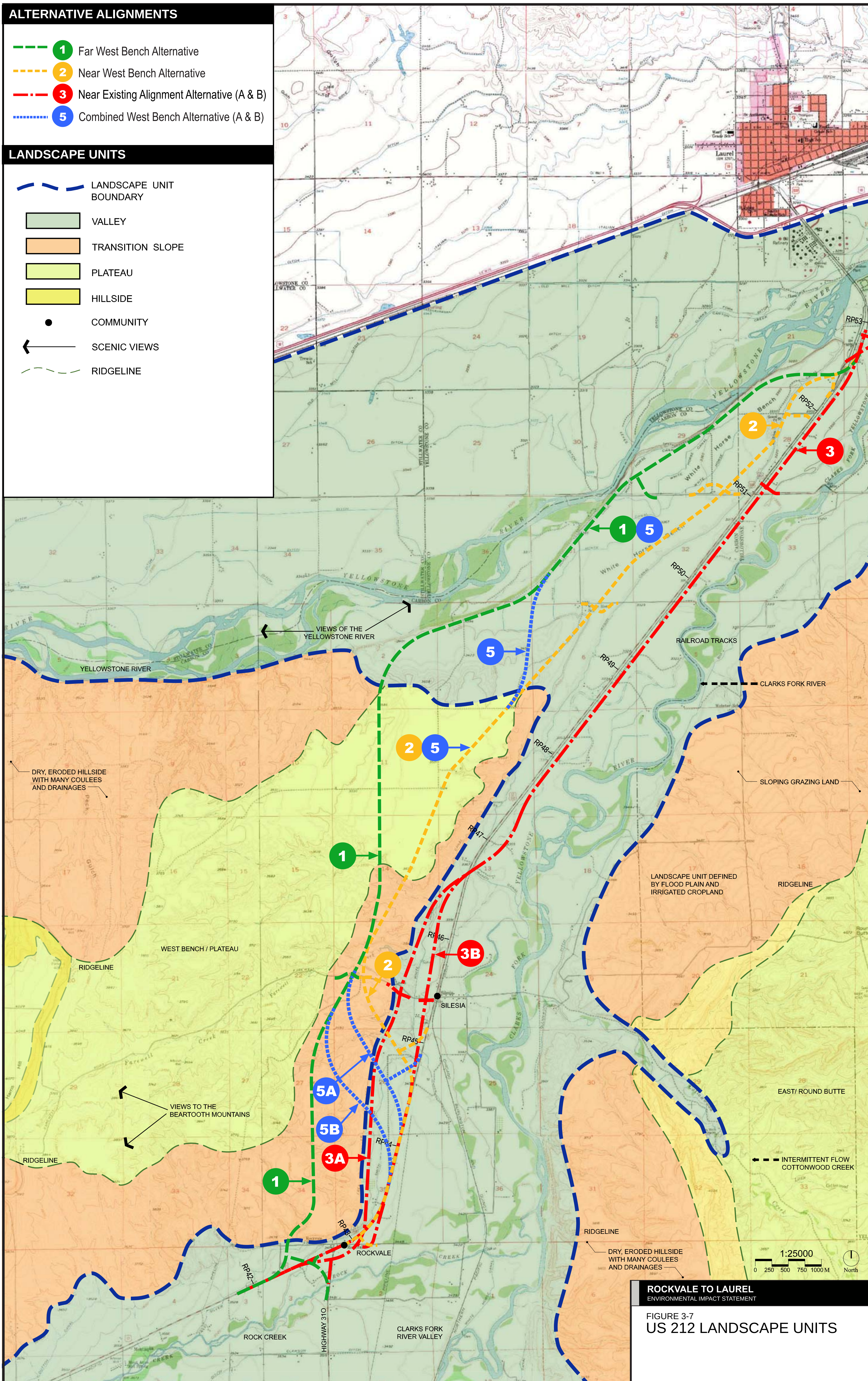
The proposed highway project would affect those viewing the road and those viewing from the road. Although the greatest number of viewers are from the road, the greatest view durations would be by viewers off the road. Scenic quality is most important to tourists, often determining the route tourists select to reach a destination.

Residents are the group most sensitive to changes in their view of the road. Residents might interpret higher traffic volumes as an adverse impact to their view shed. Residents living along the existing corridor are a small, but growing, group of viewers of the road.

Viewer sensitivity can be assumed to be moderate for commercial users and commuters and moderate-to-high for both residents and tourists. Many of the tourists are traveling through the area specifically to enjoy the magnificent scenery or recreational opportunities. The tourist group has the highest expectations to enjoy attractive scenery.

3.19.3.2 Existing Visual Quality

The environment’s existing visual quality for the entire study area is considered moderate. This is largely attributed to the amount of modification that has occurred to the natural



ROCKVALE TO LAUREL
ENVIRONMENTAL IMPACT STATEMENT

FIGURE 3-7
US 212 LANDSCAPE UNITS

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landscape from both development and agriculture. The visual quality along the existing highway is low-to-moderate, due to the encroachment of constructed elements and alterations of the natural landscape.

The existing visual quality of the six alternative corridors was evaluated using the FHWA methodology to determine the existing visual quality rating. Visual quality rating is based on the merits of three independent parameters: landscape unity, intactness, and vividness. A rating of 7.0 is considered the highest quality rating possible under FHWA guidelines. The average existing visual quality rating for the proposed corridors ranges between 3.1 and 4.0. Ratings for existing visual quality fall within the moderate range rating.

3.20 Energy Consumption

An analysis of energy requirements and conservation potential for the build alternatives was conducted (TRB, 2000). The evaluation considered both the direct and indirect energy impacts of the proposed project. Direct energy, also known as operational energy, is the energy consumed by vehicles using the highway. Vehicle fuel usage is an excellent indicator of direct energy consumption. Indirect energy consumption includes energy expended in the construction, improvement, and maintenance of the roadway. The exact amount of energy consumed to maintain the PTW is unknown.

Traffic speed, degree of traffic congestion, vehicle fuel efficiency, and total miles driven influence the amount of fuel an automobile uses. The extent of horizontal curves in the road, the angle of the curves, and distances are some of the factors considered when determining the energy impacts or conservation potential of a roadway. Measures that improve traffic flow decrease fuel consumption for the average vehicle.

US 212 between Rockvale and Laurel, Montana, has become increasingly congested, especially in the summer tourist season. US 212 connects I-90 to the Beartooth Highway, which provides access to the northeast entrance of Yellowstone National Park. Traffic volumes are expected to exceed the ability of this two-lane roadway to provide safe and uncongested transportation services. The highway does not meet current design and engineering standards, which will continue to influence accident rates as traffic within the project area increases. Accidents slow traffic flow, which raises energy consumption.

3.21 Geology and Soils

The geology and soils section provides information about:

- Topography
- Geology
- Soils

3.21.1 Topography

The landscape of the project area has been formed primarily by glacial and alluvial processes. It consists of a glacial plain dissected by irrigation ditches, stream drainages, the Yellowstone River, and the Clarks Fork Yellowstone River. The northern end of the project area is marked by the Yellowstone River, which continues to run northeasterly throughout the project area. Rock Creek, at the southern end of the project, also runs through the project area. Steep cliffs and bluffs are observed along the southeast side of the Yellowstone River. The Clarks Fork Yellowstone River runs along the eastern edge of the project area, in addition to the existing US 212, which lies just to the west of the Clarks Fork Yellowstone River. Fairly steep, eroded bluffs were observed along the northwest side of the existing highway alignment. Landslides were not observed on the aerial photographs, but some small debris flows may be present. Rolling hills exist on the southeast side of the Clarks Fork Yellowstone River, in addition to numerous erosional channels, barren slopes, and “badland” type topography.

3.21.2 Geology

The *Geologic Map of the Billings 30' x 60' Quadrangle* (Lopez, 2000) provides a geologic map of the vicinity. This map shows the primary bedrock formations in the area to be the Mowry Shale and the Belle Fourche Shale. The Mowry Shale is described as light to medium gray, very fine to fine-grained sandstone, siltstone, and shale. Bentonite beds are common and range in thickness from 0.3 to 1.2 m (1.0 to 4.0 ft). The Belle Fourche Shale is described as dark gray, fissile shale with thick bentonite beds in the lower part. These formations are typically flat-lying. Faults have not been mapped in the project area.

Steep cliffs and bluffs, observed along the southeast side of the Yellowstone River, are composed of horizontal sedimentary rocks. Alignments that require excavation into these cliffs might encounter relatively hard sedimentary bedrock. It appears that the terrain on the southeast side of the Clarks Fork Yellowstone River is composed of easily erodible soil or very soft bedrock. Alignments in this area that require cut slopes might be prone to soil erosion. It appears the cut slopes would be excavated in either loose soil or soft sedimentary bedrock.

Along the valley bottoms, alluvial floodplain and terrace deposits are present. The alluvial floodplain deposits consist primarily of rounded gravel, sand, silt, and clay. The alluvial terrace deposits form flat benches and consist primarily of rounded cobbles to pebbles with minor amounts of sand and silt (Lopez, 2000). These terraces typically range from 6 to 18 m (20 to 60 ft) in thickness. Numerous abandoned river channels were observed in the floodplain of the Clarks Fork Yellowstone River along the existing alignment. These abandoned channels may be filled in with soft, fine-grained sediments. Settlement in these areas might be a possible geotechnical concern.

3.21.3 Soils

3.21.3.1 Yellowstone County

The major soils in Yellowstone County underlying potential highway alignments differ depending on landscape position. Soils in the Clarks Fork Yellowstone River valley are dominated by clay loam to sandy clay loam soils (USDA, Soil Conservation Service [SCS], 1972). Permeability of the deep, well-drained soils is slow to moderately slow, and the risk of runoff is low. Erosion ranges from slight to moderate (wind erosion). The clay loam-dominated soils are generally favorable for highway construction. The sandy clay loam soils are less favorable due to low compressibility and moderate shrink-swell and frost-action potential. Soils on the bench are dominated by loamy fine sand. These deep, excessively drained soils have rapid permeability. They are highly susceptible to wind-blown erosion. The major soil on the bench is generally favorable for highway construction, except there is a high risk of erosion on exposed cut slopes.

3.21.3.2 Carbon County

Soils in the Clarks Fork Yellowstone River valley underlying potential highway alignments are dominated by clay loam soils to silty clay loam soils (SCS, 1975). Runoff in these deep, well-drained soils is slow to medium, permeability is slow to moderate, and erosion potential is slight. Factors affecting highway construction include a high frost-action potential and moderate shrink-swell potential. Soils on the west bench through which potential highway alignments pass are dominated by fine sandy loams on top and clay loams to silty clay loams on the breaks. Runoff in the relatively level, deep, well-drained fine sandy loam soils on top is slow, permeability is moderate to moderately rapid, and erosion potential is slight. Highway construction is generally favorable, but some soils have a moderate frost action potential. As the slope increases and soils change to clay loams and silty clay loams, the soils become shallow, runoff increases to rapid, and erosion potential increases to moderate. These soils are also less favorable for highway construction, as they are less than 51-cm (20-in)-deep over shale, are highly erodible, and have slopes from 15 percent to more than 25 percent.

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CHAPTER 4 ENVIRONMENTAL CONSEQUENCES

This environmental consequences chapter analyzes potential social, economic, and environmental impacts of the alternatives considered against the existing baseline following the National Environmental Policy Act (NEPA) as implemented for federally funded projects (42 U.S.C. 4321 et seq.) and the Montana Environmental Policy Act (MEPA) (MCA 75-1-101 et seq.). Measures proposed to mitigate adverse impacts are also described. This chapter provides the analytical basis for evaluating the comparative merits of the alternatives. The following alternatives were analyzed:

- No Build Alternative
- Alternative 1—Far West Bench
- Alternative 2—Near West Bench
- Alternative 3A—Near Existing Alignment
- Alternative 3B—Near Existing Alignment
- Alternative 5A—Combined West Bench
- Alternative 5B—Combined West Bench (Preferred)

FHWA and MDT propose Alternative 5B as the Preferred Alternative.

This chapter is organized into the following sections:

- Land Use
- Farmlands
- Social Conditions
- Transportation Right-of-Way and Relocations
- Economic Conditions
- Environmental Justice
- Pedestrian and Bicycle Considerations
- Air Quality
- Noise
- Water Flow and Quality
- Wetlands
- Water Bodies and Aquatic Resources
- Vegetation
- Wildlife Resources
- Threatened and Endangered Species and State Species of Concern
- Floodplains
- Cultural Resources
- Hazardous Materials
- Visual Resources
- Energy Consumption

- Geology and Soils
- Construction Impacts Related to the Proposed Project
- Local Short-Term Uses and Long-Term Productivity
- Irreversible and Irretrievable Commitments of Resources
- Cumulative Impacts
- Major Unresolved Issues

To evaluate environmental consequences, an 80-m (260-ft)-wide impact area (Figure 2-7) was used for the build alternatives to capture the majority of the construction limits needed. The width is based on the 11-meter Median Typical Section (100-ft Section) described in *Section 2.2.2.1*. Except in isolated areas of large cuts or fills, the proposed roadway would be within this impact area or footprint. In places where the proposed roadway might be beyond the footprint, construction limits were identified on an individual basis. It should be noted that potential impacts were estimated based on the conceptual (approximately 30 percent) design that is available at this early stage of the design process. As the design process continues and as additional avoidance, minimization, and mitigation strategies are evaluated, potential impacts may change slightly.

When all build alternatives within a particular resource area have the same impacts and proposed mitigation measures, those impacts, indirect effects, and mitigation measures are described before specific impacts and mitigation measures for individual build alternatives are discussed.

Note that the effects on each of the resources during the construction phases of the proposed project are discussed separately in *Section 4.22, Construction Impacts Related to the Proposed Project.* In addition, local short-term uses and long-term productivity; irreversible and irretrievable commitments of resources; cumulative impacts; and major unresolved issues are discussed in *Sections 4.23, 4.24*, *4.25*, and *4.26*, respectively.

4.1 Land Use

The following sections discuss the consistency of the alternatives with respect to the plans, policies, and goals of the growth policies developed by Carbon County (2003), Yellowstone County (2003), and the City of Laurel (2004).

4.1.1 No Build Alternative

The No Build Alternative would be consistent with the land use policies of the City of Laurel (2004) and Yellowstone County (2003) since it would not impact the Yellowstone River or convert NRCS-classified suitable farmlands. However, the current alignment would not meet the transportation or economic goals of Yellowstone County and would not provide aesthetic value to the City of Laurel. The No Build Alternative would be consistent with the Carbon County Growth Policy (2003) since the existing alignment would not convert NRCS-classified suitable farmlands and would preserve open spaces.

The No Build Alternative would not be consistent with the transportation policies of Yellowstone and Carbon counties since it would not improve the transportation infrastructure or increase highway safety. The current highway system would not meet the traffic demands expected in the outlying areas of Yellowstone and Carbon counties.

4.1.1.1 Indirect Effects

Indirect effects on land uses are not expected with the No Build Alternative.

4.1.1.2 Mitigation

No land use mitigation measures are proposed for the No Build Alternative.

4.1.2 Build Alternatives

Regardless of whether the proposed project is constructed, the project area is expected to grow as it becomes a bedroom community to Billings and more vacation homes are constructed (McGann, pers. comm., 2001; City of Laurel, 2004). It is not known exactly how or where that growth would occur because an area's growth depends on such factors as the availability of jobs, the quality of life, property taxes, and the quality and availability of schools and other public services. Growth and development are also influenced by a complex interaction of natural and built environments, economic conditions, and individual perceptions.

If the proposed build alternatives were implemented, some land would be permanently incorporated into the transportation system. Some dry land and irrigated farmland, open or natural land, and rangeland would be impacted. Approximate land use impacts are quantified in Tables S-3 and 2-11 and further discussed in *Section 4.2, Farmlands.*

4.1.2.1 Indirect Effects

The proposed project has been designed to address existing and projected demands that would occur independent of the project. The proposed project will not increase the overall rate of growth in the project area, but it may affect the location or timing of when growth would occur. It is anticipated that future residential growth will mostly likely occur along the proposed project area. With the anticipation of residential housing, there is the potential for future commercial development.

4.1.2.2 Mitigation

Where appropriate, local growth policies would be integrated into the strategies for managing access (see *Section 2.2.3.2*, *General Access Management*). Implementation of access management within the project corridor might result in relocating, combining, or eliminating some existing access points if alternate access points are available or can be provided. However, access management would not be used to prohibit the development of private property.

4.1.2.3 Alternative 1—Far West Bench

Alternative 1 would generally comply with the objectives in the Carbon County Growth Policy. While this alternative would promote preservation of farmland of statewide importance, it would not avoid development of agricultural lands or preserve open space. The alignment would provide more opportunities for development in currently unpopulated areas and increase the need for fire, water, and public services. Alternative 1 would meet several Yellowstone County goals. By providing a route along the Yellowstone River, Alternative 1 would be consistent with the policies by providing aesthetics, promoting open space, and increasing safety elements.

Alternative 1 would be generally compliant with the land use policies of the City of Laurel, which are applicable to the northernmost portion of the project area, by improving the transportation system, maintaining quality residential development, and creating economic opportunities along the new alignment.

4.1.2.4 Alternative 2—Near West Bench

Alternative 2 would be generally non-compliant with the goals of the Carbon County Growth Policy. Of the build alternatives, this alternative would have the most impacts on NRCS-classified suitable farmlands and open lands. Alternative 2 would have the highest number of crossings of the historical features of the Free Silver Canal, would consume the best agricultural lands, and would provide more opportunities for growth outside of populated areas.

Related to the Yellowstone County Growth Policy, Alternative 2 would be the least compliant of the build alternatives. Alternative 2 would double front many properties between the alignment and the existing roadway, which would cause several safety concerns and provide opportunities for developing residential subdivisions outside of incorporated areas.

Alternative 2 would be fairly consistent with the land use policies of the City of Laurel as described for Alternative 1.

4.1.2.5 Alternative 3A—Near Existing Alignment

Alternative 3A would be generally compliant with the Carbon County Growth Policy. The alignment would cross some parcels close to the existing alignment and would impact several irrigated farmland parcels in unpopulated areas in the southern portion of the alignment.

Except for the objective regarding the preservation of open space, the inconsistencies with the Carbon County Growth Policy objectives for Alternative 3A would be similar to those described for Alternative 2. By following the existing US 212 alignment, Alternative 3A would promote preservation of open space.

Alternative 3A would be generally consistent with the land use policies of the City of Laurel as described for Alternative 1. Alternatives 3A and 3B would parallel the existing US 212

alignment. The impacts of Alternatives 3A and 3B would be similar to those for the existing alignment related to traffic and land uses as addressed by the City of Laurel policies.

4.1.2.6 Alternative 3B—Near Existing Alignment

Because Alternative 3B would most closely follow the existing highway alignment, the impacts to irrigated farmland parcels caused by the alignment of Alternative 3B in Carbon County would be less than those for Alternative 3A. All other land use impacts would be the same as those described for Alternative 3A.

4.1.2.7 Alternative 5A—Combined West Bench

Alternative 5A would be generally consistent with the Carbon County Growth Policy. The Alternative 5A alignment would promote preservation of open space but would not avoid impacts to NRCS-classified suitable farmlands or agricultural lands. Alternative 5A would impact more irrigated farmland parcels than the other build alternatives because of the access spur to the existing highway alignment in the southern section, which would impact several farm fields. Alternative 5A would also provide increased opportunities for growth outside of incorporated areas.

Alternative 5A would meet several Yellowstone County goals. By providing a route along the Yellowstone River, Alternative 5A would be consistent with the policies by providing aesthetics, promoting open space, and increasing safety elements.

Alternative 5A would follow the same alignment through Yellowstone County and the City of Laurel as Alternative 1. (Refer to *Section 4.1.2.3, Alternative 1—Far West Bench*.)

4.1.2.8 Alternative 5B—Combined West Bench (Preferred)

Because of their similarities, the consistency of Alternative 5B (preferred) with respect to land use policies would be similar to that described for Alternative 5A. The magnitude of the number of acres of farmland of statewide importance impacted would be less than for Alternatives 2 or 5A.

4.2 Farmlands

4.2.1 No Build Alternative

Since additional rights-of-way would not be acquired, farmland resources would not be impacted with the No Build Alternative.

4.2.1.1 Indirect Effects

Indirect effects on farmland resources are not expected with the No Build Alternative.

4.2.1.2 Mitigation

No farmland resource mitigation measures are proposed for the No Build Alternative.

4.2.2 Build Alternatives

The Farmland Protection Policy Act requires federal agencies involved in projects that convert farmland to complete a USDA Farmland Conversion Impact Rating Form for Corridor Type Projects (NRCS-CPA-106). The completed NRCS-CPA-106 forms are included in *Appendix C*. The USDA recommends that sites (project alternatives) with scores totaling 160 points or greater (out of 260 points) be given increasingly higher levels of consideration for protection. The farmland impact rating scores for all the alternatives were less than 160 points. The analysis suggests that, based on USDA's recommendation, the Preferred Alternative would be given a minimal level of protection and no additional evaluations would be necessary.

The build alternatives would displace varying amounts of agricultural land. That is, the land would be acquired for right-of-way use, which would convert it from agricultural use. Figure 3-2 illustrates the location of the farmland in the project area based on the farmland classification system developed by the NRCS. Table 4-1 summarizes the amount of Prime if Irrigated Farmland and Farmland of Statewide-Importance (that is, NRCS-classified suitable farmland) that would be displaced. That table also provides information about the amount of irrigated agricultural habitat (including pasture/alfalfa) and dryland agricultural habitat (including pasture) that would be displaced. Total irrigated and dryland agriculture acres differ from the NRCS-classified farmlands because the soil types do not dictate the land uses and all suitable farmlands are not in production.

The amount of agricultural land displaced by rights-of-way would be specific to each build alternative, as noted in Table 4-1. Alternative 2 would convert the highest number of acres of NRCS-classified suitable farmland from agricultural to right-of-way use, largely because the alignment would travel for a greater distance within the river valley (where farmland is the primary use). Alternatives 3A and 3B would have the least impacts to NRCS-classified suitable farmlands, since they follow the existing highway alignment. Alternative 1 would impact the fewest acres of Farmland of Statewide Importance but would affect more dryland pasture and non-irrigated lands, displacing the most overall acreage of agricultural lands. Alternatives 1, 3A, 3B, and 5B (preferred) would have the least impacts on Farmland of Statewide Importance while creating a new alignment and are within 1 percent of each other.

4.2.2.1 Indirect Effects

The proposed project might indirectly affect farmland resources by decreasing total crop production on those lands displaced by a specific alternative. Patterns of land use might also be modified by a specific build alternative.

TABLE 4-1
Projected Amount of Agricultural Land Displaced by Rights-of-Way for the Alternatives*

Type of Agricultural Land	Alt. 1	Alt. 2	Alt. 3A	Alt. 3B	Alt. 5A	Alt. 5B (Preferred)
Prime if Irrigated Farmland	54.00 ha (133.44 ac)	43.17 ha (106.68 ac)	41.79 ha (103.27 ac)	57.67 ha (142.50 ac)	54.48 ha (134.61 ac)	66.05 ha (163.22 ac)
Farmland of Statewide-Importance	33.60 ha (83.03 ac)	64.99 ha (160.60 ac)	34.01 ha (84.03 ac)	34.76 ha (85.90 ac)	49.20 ha (121.57 ac)	34.00 ha (84.01 ac)
Total NRCS-classified suitable farmland	**87.60 ha (216.47 ac)**	**108.17 ha (267.28 ac)**	**75.80 ha (187.30 ac)**	**92.43 ha (228.40 ac)**	**103.67 ha (256.18 ac)**	**100.05 ha (247.23 ac)**
Irrigated agricultural habitat (including pasture/alfalfa)	28.00 ha (69.20 ac)	21.16 ha (52.28 ac)	46.83 ha (115.72 ac)	29.20 ha (72.16 ac)	38.36 ha (94.78 ac)	35.12 ha (86.78 ac)
Dryland agricultural habitat (including pasture)	61.53 ha (152.05 ac)	44.40 ha (109.72 ac)	0 ha	0 ha	39.21 ha (96.90 ac)	45.57 ha (112.60 ac)
Total irrigated and dryland agricultural habitat	**89.54 ha (221.25 ac)**	**65.56 ha (162.00 ac)**	**46.83 ha (115.72 ac)**	**29.20 ha (72.16 ac)**	**77.57 ha (191.68 ac)**	**80.69 ha (199.38 ac)**

* These values are based on preliminary (approximately 30 percent) design and may change as the design process continues.

4.2.2.2 Mitigation

No farmland resource mitigation measures are proposed for the build alternatives.

4.3 Social Conditions

Social conditions consist of such things as community characteristics; public services; parks and recreation opportunities; and transportation patterns and safety.

4.3.1 No Build Alternative

The existing US 212 would remain at LOS E. However, as populations and traffic volumes grow, there would be increased levels of delay and driver frustration (because drivers would often be unable to pass or maintain safe and acceptable operating speeds). In addition, highway safety problems would increase. (See *Section 2.3.1, No Build Alternative.*)

4.3.1.1 Indirect Effects

The No Build Alternative might indirectly affect social conditions by increasing congestion on and along the current highway route as the patterns of use along the presently traveled way (PTW) increase. Public services such as emergency services might be altered by the expected future congestion. It is not expected that the No Build Alternative would indirectly affect either community characteristics or parks and recreation opportunities.

4.3.1.2 Mitigation

No social condition mitigation measures are proposed for the No Build Alternative.

4.3.2 Build Alternatives

The build alternatives would improve LOS, alleviate some highway safety problems, and restrict access to the highway. (See *Section 2.3.2*, *Build Alternatives*.)

4.3.2.1 Indirect Effects

Indirect effects from the proposed project might affect community characteristics by improving traffic patterns, safety, and emergency response of public services. The proposed project is not expected to indirectly affect parks and recreation opportunities.

4.3.2.2 Mitigation

Strategies for managing access (see *Section 2.2.3.2, General Access Management*) would be used to handle specific impacts related to accessing US 212.

4.4 Transportation Right-of-Way and Relocations

4.4.1 No Build Alternative

Rights-of-way would not be acquired, so private property would not be displaced with the No Build Alternative.

4.4.1.1 Indirect Effects

Indirect effects related to transportation rights-of-way are not expected with the No Build Alternative.

4.4.1.2 Mitigation

No transportation right-of-way and relocation mitigation measures are proposed for the No Build Alternative.

4.4.2 Build Alternatives

The build alternatives would require the acquisition of rights-of-way and potential relocation of residences and businesses displaced by the new alignment. Table 4-2 summarizes projected property displacement and right-of-way impacts for each alternative. The

displacement and right-of-way impact information was used to assess the consequences for each of the alternatives.

TABLE 4-2
Summary of Projected Relocations and Right-of-Way Impacts by Alternative[a]

New Transportation Right-of-Way and Relocations	No Build	Alt. 1	Alt. 2	Alt. 3A	Alt. 3B	Alt. 5A	Alt. 5B (Preferred)
Number of houses impacted	0	2	2	10	10	2	4
Number of farmsteads impacted	0	1	1	2	3	1	1
Number of businesses impacted	0	0	0	2[b]	1[c]	0	0
Area of new right-of-way in hectares (acres)	0	178 ha (440 ac)	138 ha (341 ac)	168 ha (415 ac)	130 ha (321 ac)	147 ha (363 ac)	154 ha (381 ac)
Number of affected parcels	0	34	48	53	49	39	37

[a]These values are based on preliminary (approximately 30 percent) design and may change as the design process continues.
[b]Yellowstone Valley Electric Co-Op electrical substation in Silesia and Adkins Tractor Parts and Sales.
[c]Yellowstone Valley Electric Co-Op electrical substation in Silesia.

It is unknown whether displaced residents and businesses would rather relocate in the same general area along the project corridor or move out of the area. Some businesses might choose to close rather than relocate.

The build alternatives would require additional rights-of-way and would displace private property.

4.4.2.1 Indirect Effects

Indirect effects of the proposed project might include the potential modification of land use patterns around lands acquired for the selected build alternative. For example, commercial development might be more attractive around a new corridor than farming; however, change of land use patterns is primarily controlled by the land use planning agencies and zoning laws.

4.4.2.2 Mitigation

The acquisition of land or improvements for highway construction is governed by state and federal laws and regulations designed to protect both the landowners and the taxpaying public. Affected landowners would be entitled to receive fair market value for land or buildings acquired and damages to remaining land due to the effects of highway construction.

The proposed project would be developed in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Public Law 91-646 as amended, 42 USC 4601, et. seq.) and the Uniform Relocations Act Amendments of 1987 (Public Law 100-17). No additional transportation right-of-way and relocation mitigation measures are proposed for the build alternatives.

4.4.2.3 Alternative 1—Far West Bench

Alternative 1 would require the displacement of two houses, as well as a small barn, a corral, a shop, and a shed on one family farm (Table 4-2).

4.4.2.4 Alternative 2—Near West Bench

Alternative 2 would require the same displacements described for Alternative 1.

4.4.2.5 Alternative 3A—Near Existing Alignment

Alternative 3A would require the displacement of 10 residences, two businesses, and the house and outbuildings on two family farms. (Note that, since some houses function both as a residence and as a family farm, they are counted in both categories.) The two displaced businesses include Adkins Tractor Parts and Sales and the electrical substation in Silesia owned by the Yellowstone Valley Electric Co-Op (Table 4-2). Although the right-of-way would displace the tractor business's sales lot, buildings would not be displaced.

4.4.2.6 Alternative 3B—Near Existing Alignment

Alternative 3B would displace 10 residences, 1 business, and the house and outbuildings on 3 family farms. The electrical substation in Silesia owned by the Yellowstone Valley Electric Co-Op would be the only business displaced by this alternative (Table 4-2).

4.4.2.7 Alternative 5A—Combined West Bench

Alternative 5A would displace two residences, one of which is a house on a family farm. That farm's outbuildings would also be displaced. No businesses would be displaced by this alignment (Table 4-2).

4.4.2.8 Alternative 5B—Combined West Bench (Preferred)

Alternative 5B (preferred) would displace four residences, one of which is a house on a family farm. That farm's outbuildings would also be displaced. No businesses would be displaced by this alignment (Table 4-2).

4.5 Economic Conditions

4.5.1 No Build Alternative

It is not anticipated that property tax revenues would decrease (a negative impact) with the No Build Alternative (Table 4-3). Patronage of local businesses would be expected to increase under the No Build Alternative as traffic increases on US 212, with or without the proposed project.

4.5.1.1 Indirect Effects

Indirect effects on economic conditions are not expected with the No Build Alternative.

4.5.1.2 Mitigation

No economic condition mitigation measures are proposed for the No Build Alternative. As local and through-traffic volumes increase with population growth, proportional increases in roadside business activity would be expected.

TABLE 4-3
Estimated Annual Loss of Property Tax Revenue from Displaced Residential and Business Property*

Alternative	Carbon County Property Tax Loss	Yellowstone County Property Tax Loss	Total Tax Loss
No Build Alternative	$0	$0	$0
Alternative 1	$0	$2,300	$2,300
Alternative 2	$0	$2,300	$2,300
Alternative 3A	$1,860	$8,300	$10,160
Alternative 3B	$2,400	$8,300	$10,700
Alternative 5A	$8,123	$744	$8,867
Alternative 5B (Preferred)	$10,019	$744	$10,763

*Does not include right-of-way take of agricultural and ranching land.
Source: 2000 Tax Records for Carbon and Yellowstone counties.

4.5.2 Build Alternatives

4.5.2.1 Regional Impacts

Reviews of regional economic data and conversations with county planners indicate the potential for minor positive impacts on the regional economy as a direct result of the proposed project.

The project would improve the region’s transportation infrastructure. According to the Economic Development Coordinator for the Beartooth Resource Conservation and Development (RC&D) Area, the new highway could encourage more tourist traffic through the area, especially in the summer months, and would provide easier access into Carbon County (Kaiserski, pers. comm., 2001). (The Beartooth RC&D, in partnership with the NRCS and the Economic Development Administration, assists rural economies in a five county area that includes Carbon and Yellowstone counties.) This statement is supported by the *Beartooth RC&D Area Plan and Overall Economic Development Program* (Beartooth RC&D, 1995), which identifies that a high percentage of visitors pass through this area to Yellowstone National Park and surrounding outdoor attractions, and that a well-maintained road system would continue to funnel tourism-related services and dollars to communities

along these routes. As traffic continues to grow, more refueling stops and restaurants might be added.

4.5.2.2 Local Impacts

Rockvale, Laurel, and the businesses along US 212 would continue to receive tourism traffic heading to and from the Beartooth Highway, which accesses the northeast entrance of Yellowstone National Park. Because overall traffic is expected to increase on US 212, it is anticipated that patronage of local businesses would also increase.

4.5.2.3 Indirect Effects

The selection of a specific alternative alignment would influence where new tourism-related or other businesses might locate along the route of the proposed project. Due to the complexity of the many factors that influence growth, it is impossible to predict exactly where and when this growth would occur.

While economic plans support growth, county planning documents (as described in *Section 3.1.4, Applicable Land Use Policies*) focus on managing growth while limiting impacts on the farming community. The build alternatives would encourage continued conversion of historically farming and ranching properties into other economic uses, such as residential and commercial development.

The proposed project might facilitate access to future development, making residential and commercial growth more appealing, but it would not be the cause of such growth. The project area is becoming a bedroom community to Laurel and Billings. In addition, it is a preferred location for second homes and vacation properties. Growth of this area is more likely dependent on such factors as the availability of jobs; the quality of life; property taxes; and the quality and availability of schools and other public services than on the reconstruction of US 212. Residences and commercial properties will continue to be built whether or not the proposed project is constructed.

Secondary and cumulative commercial and residential development would likely occur at the north and south ends of the project area, where the new US 212 would intersect with the existing US 212 and US 310, and at railroad crossings that would be controlled access points to the new alignment. *Appendix A* illustrates these intersection locations, which include intersections of US 212 with:

- The PTW (Figures A-5a, A-5b, A-5c, A-5d, A-7, A-11, A-13, A-15, A-17, and A-18)
- US 310 (Figures A-1, A-6, and A-12)
- The railroad crossings at RP 47.9 (Figure A-19), at RP 48.9 (Figure A-20), at RP 50.2 (Figure A-21), and at Byam Road (Figure A-22)

As the population in the area grows, it is likely that farmlands and ranchlands near the intersections of US 212 with county and state roads would be targeted for residential and commercial development, including intersections of US 212 with:

- Farewell Road (Figures A-2, A-8, A-14, and A-16)
- White Horse Bench Road (Figure A-3)
- North White Horse Bench Road (Figures A-4 and A-10)
- South White Horse Bench Road (Figure A-9)

The residential and commercial development might positively impact the local economy. However, such development might require zoning changes and deter from the established county growth policies.

Table 4-4 summarizes the economic impacts for each alternative and Table 4-5 provides information about the impacts to specific businesses. Figure 4-1 shows the locations of businesses potentially impacted by the build alternatives.

4.5.2.4 Mitigation

No economic condition mitigation measures are proposed for the build alternatives.

4.5.2.5 Alternative 1—Far West Bench

The economic impacts related to Alternative 1 include a minor loss of property tax revenues to Carbon and Yellowstone counties by right-of-way acquisition (Tables 4-3 and 4-4) and a potential reduction in the number of patrons to four roadside businesses within the project area that rely on seasonal travelers (Table 4-5 and Figure 4-1).

With Alternative 1, potential "through traffic" patrons would no longer pass by the three restaurants and one convenience store (listed in Table 4-5) that rely on seasonal travelers for a significant portion of their business. "Through" travelers would lose convenient access to these businesses. However, local patrons would still be able to access the businesses from the PTW. Because access to the business would be less convenient to travelers, the Quick Stop Drive In, which is only open during the summer tourist season, would be most vulnerable to losing revenue.

The PTW would become a local collector route in the northern portion of its alignment. With the removal of high-speed traffic from the PTW, residential development would be more enticing, which might potentially increase property values within the area.

TABLE 4-4
Summary of Projected Economic Impacts[a]

Economic Impacts	No Build Alt.	Alt. 1	Alt. 2	Alt. 3A	Alt. 3B	Alt. 5A	Alt. 5B (Preferred)
Regional	Minor improvement	Minor improvement	Minor improvement	Minor improvement	Minor improvement	Minor improvement	Minor improvement
Local							
Number of farmsteads impacted	No change	1	1	2	3	1	1
Number of other businesses displaced	No change	0	0	2[b]	1[c]	0	0
Loss in property tax	No change	$2,300	$2,300	$10,160	$10,700	$8,867	$10,763
Number of local businesses with a potential decline in patronage	No change	4	1	4	0	1	1
New business opportunities	From traffic growth	High	Moderate	Low	Moderate	Moderate	Moderate

[a]These values are based on preliminary (approximately 30 percent) design and may change as the design process continues
[b]Yellowstone Valley Electric Co-Op electrical substation in Silesia and Adkins Tractor Parts and Sales.
[c]Yellowstone Valley Electric Co-Op electrical substation in Silesia.

Property tax losses were not calculated for the four businesses. These businesses might continue to operate at their present locations, serving travelers (who could access the businesses via nearby intersections) and continuing to serve local patrons (Table 4-4).

The four businesses maintain a work force of approximately 38 to 43 employees. A decline in patronage caused by less convenient access by travelers to the four businesses might reduce their work force.

The loss of a farm homestead and outbuildings would not appear to decrease the viability of the farm because the owner of the farm would be compensated for the loss and could construct replacement buildings if desired.

TABLE 4-5
Summary of Projected Impacts to Businesses in the Project Area [a]

Type of Business	Business Name	Alternative	Number of Employees	Impact
Family farm	NA	1, 5A, 5B (Preferred)	3	Displace grain silo
Tractor sales and repair	Adkins Tractor Parts and Sales	3A	7	Displace sales lot
Electrical substation	Yellowstone Valley Electric Co-Op	3A, 3B	NA	Displace electrical substation
Family farm	NA	1, 2, 3A, 3B, 5A, 5B (Preferred)	2	Displace two houses, small barn, corral, shop, shed
Family farm	NA	3A, 3B	2	Displace house and outbuildings
Family farm	NA	3B	2	Displace house and outbuildings
Restaurant	El Rancho Inn	1, 2, 3A, 5A, 5B (Preferred)	6	All but Alt 3B reroute “through traffic” away from business
Restaurant[b]	Fort Rockvale Restaurant and Lounge	1, 3A	27	Alt 1 and 3A: reroute “through traffic” away from business
Restaurant[b] Seasonal: closed in fall/winter	Quick Stop Drive In	1, 3A	1-4	Alt 1 and 3A: reroute “through traffic” away from business
Convenient store/gas[b]	Rockvale Travel Plaza	1, 3A	4	Alt 1 and 3A: reroute “through traffic” away from business

[a]These values are based on preliminary (approximately 30 percent) design and may change as the design process continues.
[b]Would use US 310 junction to access business, but the business would likely experience a reduction in “through traffic” patronage from loss of roadside convenience.

Notes: NA = not applicable

Commercial growth would likely occur over time near the intersection of the new US 212 with the PTW. (See *Appendix A*, Figures A-5a through A-5d for intersection alternatives). It is also likely that commercial growth would occur at the junction of US 212 and US 310. Some landowners might seek commercial and residential development opportunities at key access points along the alignments. The rate of such development is influenced by many factors other than roads. Roads may have some impact as to the timing and location of growth. However, other factors, such as general economic conditions, interest rates, preferred locations in town, and zoning and development trends, are the driving issues that influence growth rate in a community. In addition to the intersections mentioned above, residential and commercial growth would likely occur over time near the US 212 intersections with the county roads, as these would be the main public access points on and off the new highway. The locations for potential growth include the intersections of US 212 with Farewell Road (*Appendix A*, Figure A-2), White Horse Bench Road (*Appendix A*, Figure A-3), and North White Horse Bench Road (*Appendix A*, Figure A-4).

4.5.2.6 Alternative 2—Near West Bench

The economic impacts related to Alternative 2 include a minor loss of property tax revenue to Yellowstone County by right-of-way acquisition (Tables 4-3 and 4-4). The new roadway would be moved approximately 1.1 km (0.7 mi) west of Silesia and the El Rancho Inn (Figure 4-1), potentially reducing the number of patrons of the restaurant (Table 4-5).

The PTW would become a local collector route in the northern portion of its alignment. With the removal of high-speed traffic from the PTW, residential development would be more enticing, which might potentially increase property values within the area.

Commercial growth would likely occur over time at the junction of the new US 212 with US 310 (*Appendix A*, Figure A-6) and with the PTW (*Appendix A*, Figure A-7). Some landowners might seek commercial and residential development opportunities at key access points along the alignments. The rate of such development is influenced by many factors other than roads. Roads may have some impact as to the timing and location of growth. However, other factors, such as general economic conditions, interest rates, preferred locations in town, and zoning and development trends, are the driving issues that influence growth rate in a community. In addition to the intersections mentioned above, residential and commercial growth would likely occur over time near the following intersections with US 212 that would provide public access: at Farewell Road (*Appendix A*, Figure A-8), at South White Horse Bench Road (*Appendix A*, Figure A-9), and at North White Horse Bench Road (*Appendix A*, Figure A-10).

4.5.2.7 Alternative 3A—Near Existing Alignment

The economic impacts related to Alternative 3A include a minor loss of property tax revenues to Carbon and Yellowstone counties (Tables 4-3 and 4-4). Service-oriented businesses in Rockvale would continue to provide service to tourists and other travelers on the realigned US 212. Even though the Rockvale businesses would no longer be on the main route, they would be near enough (120 m [394 ft] from the proposed intersection) to service travelers on the new US 212 alignment.

In Silesia, with Alternative 3A, the new alignment would shift 0.5 km (0.3 mi) west of the El Rancho Inn (Figure 4-1). Since this restaurant would no longer be as convenient for travelers to access, it might experience a decline in patronage. However, convenient service from the PTW would still be provided to local patrons.

With Alternative 3A, based on 2000 tax records, Carbon and Yellowstone counties, combined, would lose annual property tax revenues of approximately $10,160 by right-of-way acquisition (assuming a total loss of property) (Tables 4-3 and 4-4).

There would be future business opportunities at new proposed intersections. As residential development and tourism expand, service-oriented businesses such as gas stations, convenience stores, and restaurants might be developed. Over time, these secondary business developments might compete with the two existing restaurants and the convenience store in Rockvale and with the restaurant in Silesia.

T102005002BOI Fig4-1BusinessLocations 02-13-2007

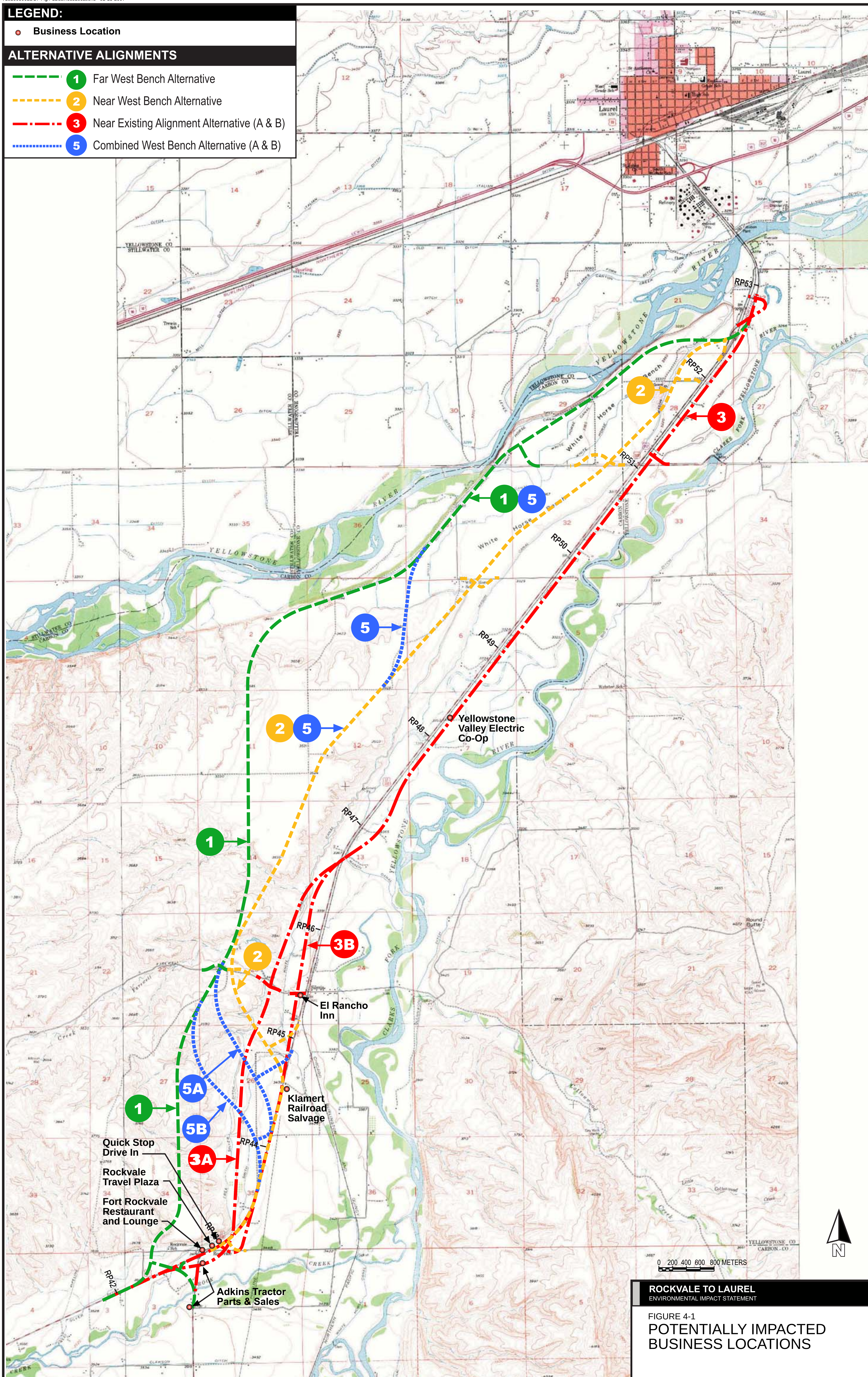

FIGURE 4-1
POTENTIALLY IMPACTED BUSINESS LOCATIONS

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Commercial growth would likely occur over time near the intersection of the new US 212 with US 310 (*Appendix A*, Figure A-12) and with the PTW (*Appendix A*, Figure A-13). Some landowners might seek commercial and residential development opportunities at key access points along the alignments. The rate of such development is influenced by many factors other than roads. Roads may have some impact as to the timing and location of growth. However, other factors, such as general economic conditions, interest rates, preferred locations in town, and zoning and development trends, are the driving issues that influence growth rate in a community. In addition to the intersections mentioned above, residential and commercial growth would likely occur over time near the following intersections with US 212 that would provide public access: at Farewell Road (*Appendix A*, Figure A-14); at the railroad crossing to a subdivision at RP 48.9 (*Appendix A*, Figure A-20); and at the railroad crossing at Byam Road (*Appendix A*, Figure A-22).

4.5.2.8 Alternative 3B—Near Existing Alignment

Economic impacts related to Alternative 3B would be similar to those for Alternative 3A except that the Alternative 3B alignment would be closer to the El Rancho Inn in Silesia. Therefore, this restaurant would be less likely to lose "through traffic" patronage. Also, since Alternative 3B follows the existing alignment through Rockvale, travelers would continue to have the same convenience to Rockvale businesses as with Alternative 2.

With Alternative 3B, based on 2000 tax records, Carbon and Yellowstone counties would lose annual property tax revenues of approximately $10,700 by right-of-way acquisition (assuming a total loss of property) (Tables 4-3 and 4-4).

Commercial growth would likely occur over time near the intersection of the new US 212 with US 310 (*Appendix A*, Figure A-6) and with the PTW (*Appendix A*, Figure A-15). Some landowners might seek commercial and residential development opportunities at key access points along the alignments. The rate of such development is influenced by many factors other than roads. Roads may have some impact as to the timing and location of growth. However, other factors, such as general economic conditions, interest rates, preferred locations in town, and zoning and development trends, are the driving issues that influence growth rate in a community. In addition to the intersections mentioned above, residential and commercial growth would likely occur near the following intersections with US 212 that would provide public access: at Farewell Road (*Appendix A*, Figure A-16), at the railroad crossing to a subdivision at RP 48.9 (*Appendix A*, Figure A-20); and at the railroad crossing at Byam Road (*Appendix A*, Figure A-22).

4.5.2.9 Alternative 5A—Combined West Bench

The economic impacts related to Alternative 5A would be the same as those for Alternative 2. Travelers would still be able to access roadside businesses in Rockvale since the alignment through Rockvale would be the same as the PTW alignment. In Silesia, with Alternative 5A, the new alignment would shift 1.1 km (0.7 mi) west of the El Rancho Inn (Figure 4-1). This restaurant would no longer be as convenient for travelers to access, so it might experience a decline in patronage. However, convenient service would still be provided to local patrons on the PTW.

With the removal of high-speed traffic from the PTW, the existing US 212 would become a local collector route in the northern portion of its alignment and residential development would be more enticing, which might potentially increase property values within the area.

Commercial and residential growth would likely occur over time at the same intersection locations as with Alternative 1 except for the different southern junction of US 212 with US 310 (*Appendix A*, Figure A-6) and the intersection of US 212 with the PTW (*Appendix A*, Figure A-17). Some landowners might seek commercial and residential development opportunities at key access points along the alignments. The rate of such development is influenced by many factors other than roads. Roads may have some impact as to the timing and location of growth. However, other factors, such as general economic conditions, interest rates, preferred locations in town, and zoning and development trends, are the driving issues that influence growth rate in a community.

4.5.2.10 Alternative 5B—Combined West Bench (Preferred)

Except for commercial growth, economic impacts related to Alternative 5B (preferred) would be the same as those for Alternative 2. Cumulative growth potential is the same as Alternative 5A except that the intersection of US 212 with the PTW (*Appendix A*, Figure A-18) would be in a different location.

4.6 Environmental Justice

4.6.1 No Build Alternative

The No Build Alternative would have no effect on minority or low-income populations.

4.6.1.1 Indirect Effects

Indirect effects related to environmental justice are not expected with the No Build Alternative.

4.6.1.2 Mitigation

No environmental justice mitigation measures are proposed for the No Build Alternative.

4.6.2 Build Alternatives

As discussed in *Section 3.6, Environmental Justice,* the preferred alternative would improve conditions for both minority and low-income as well as non-minority and non-low-income populations by improving mobility and access to housing, services, and employment areas. The preferred alternative would also reduce congestion within the study area. Improved access to new residential areas and the economic growth prompted by creation of jobs (identified in *Sections 3.1 and 3.5*) will provide additional opportunities for minorities and low-income populations.

Although U.S. Census data provide a general overview of the attributes of a large subject population, the data associated with subpopulations within the boundaries of these same areas may be diluted to such a point that the data are no longer representative of the subpopulation. To avoid such occurrences, Executive Order 12898 requires additional analysis of any subpopulations of concern; for example, subpopulations that may not be accurately represented by the use of data at the U.S. Census scale, within an area potentially affected by the project. During data collection for other phases of the project, local residents were contacted and properties were accessed. These site evaluations noted no minority populations in the impact areas. Two of the four impacted houses associated with Alternative 5B (preferred) are in disrepair; one is abandoned and the second is occupied rent-free. One rental property, which the Assessment determined was in very poor condition, might be a low-income housing unit,. It was identified for relocation (CAMA 2007), however this single family unit does not constitute a population. Other designated low-income housing units were not identified in the study area; the nearest known sites were located within the Laurel City limits (NHT, accessed 2007). None of the available information, suggests either of the two proposed displacements impact a low-income or minority population.

Therefore, this project would not result in disproportionately high and adverse effects on minority or low-income populations per Executive Order 12898.

4.6.2.1 Indirect Effects

Indirect effects related to environmental justice are not expected with the proposed project.

4.6.2.2 Mitigation

The acquisition and relocation activities would be conducted in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, and relocation resources are available to all relocatees without discrimination. MDT will make reasonable and feasible attempts to avoid acquiring properties or displacing residents regardless of status. Where avoidance is not reasonable or feasible, regulations would be followed to minimize impacts.

4.7 Pedestrian and Bicycle Considerations

Impacts to pedestrians and cyclists are assessed by studying the impacts to pedestrian and bicycle facilities.

4.7.1 No Build Alternative

The existing pedestrian and bicycle conditions would not be improved with the No Build Alternative. School children would continue to wait for school buses on narrow shoulders and side slopes along the PTW.

4.7.1.1 Indirect Effects

The No Build Alternative might indirectly affect pedestrians and bicycles by increasing the risks of traffic-related injuries as traffic along the PTW increases.

4.7.1.2 Mitigation

No pedestrian and bicycle mitigation measures are proposed for the No Build Alternative.

4.7.2 Build Alternatives

The build alternatives would provide a 2.4-m (8-ft)-wide shoulder on the road with rumble strips. This is consistent with MDT's Rumble Strip Policy, which exceeds the AASHTO standards for this purpose. Rumble strips would help separate vehicle traffic on the roadway surface from cyclists and pedestrians using the shoulder. The proposed shoulder would yield an approximately 1.85 m (6 ft) of pathway outside the rumble strips that could be used by bicycles.

The issue of providing facilities to accommodate bicycles was raised during the public involvement process. A separate bicycle path through the project would require additional rights-of-way. Since both the public and agencies requested that new rights-of-way be kept to a minimum to avoid impacts to residences, farmlands, and natural habitats, a separate bicycle path was not included as part of the proposed project.

A bicycle and pedestrian plan for the City of Laurel was completed and adopted by the City on February 3, 2004 (Cumin, pers. comm., 2006). This plan would need to be considered in the final design of the US 212 expansion.

4.7.2.1 Indirect Effects

The proposed project might indirectly affect pedestrians and bicyclists by increasing the number of people using the developed shoulder.

4.7.2.2 Mitigation

No pedestrian and bicycle mitigation measures are proposed for the build alternatives.

4.8 Air Quality

4.8.1 No Build Alternative

The LOS with the No Build Alternative is expected to decline by 2025 as a result of population growth. If more vehicles were traveling at slower speeds, more carbon monoxide and particulates would be released into the air from traffic emissions. As traffic speed

increases, re-entrained road dust becomes a larger contributor of particulate matter than traffic emissions.

4.8.1.1 Indirect Effects

Indirect effects on air quality are not expected with the No Build Alternative.

4.8.1.2 Mitigation

No air quality mitigation measures are proposed for the No Build Alternative.

4.8.2 Build Alternatives

Even though the northern part of the project corridor is near a sulfur-dioxide non-attainment area, the proposed project would not need an air quality conformity determination. Since sulfur dioxide is not a criteria pollutant for transportation conformity (40 CFR 93.102) and has not been identified by the Regional EPA Administrator or by MDEQ as a particulate matter less than 2.5 microns in diameter (PM 2.5) precursor, an air quality conformity determination would not be required under the EPA's "Final Rule" of September 15, 1997. Therefore, the proposed project would comply with Section 176(c) of the Clean Air Act (42 USC 7521[a]), as amended.

By 2025, the improved LOS with a four-lane road design would maintain or improve vehicle speeds even though more vehicles would be using the road. It is anticipated that the increased traffic would travel faster on a new alignment than on the PTW. Therefore, the build alternatives would decrease the rate of increase in vehicle emissions (carbon monoxide and particulates) compared to slower moving traffic on the PTW with the No Build Alternative. However, as traffic speed increased, re-entrained road dust would become a larger contributor of particulate matter than traffic emissions. The above air quality effects are not expected to significantly deteriorate air quality in the project area.

For each alternative in this EIS, the amount of Mobile Source Air Toxics (MSATs) emitted would be proportional to the vehicle miles traveled, or VMT, assuming that other variables such as fleet mix are the same for each alternative. The VMT estimated for each of the Build Alternatives is slightly higher than that for the No Build Alternative, because of the additional distance of the roadway. This increase in VMT could lead to higher MSAT emissions for the action alternative along the highway corridor. The emissions increase may be offset somewhat by lower MSAT emission rates because of increased speeds; according to EPA's MOBILE6 emissions model, emissions of all of the priority MSATs except for diesel particulate matter decrease as speed increases. The extent to which these speed-related emissions decreases will offset VMT-related emissions increases cannot be reliably projected because of the inherent deficiencies of technical models.

Because the estimated VMT under each of the alternatives is similar, it is expected there would be no appreciable difference in overall MSAT emissions among the various alternatives. Also, regardless of the alternative chosen, emissions will likely be lower than

present levels in the design year as a result of EPA's national control programs that are projected to reduce MSAT emissions by 57 to 87 percent between 2000 and 2020. Local conditions may differ from those national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future in nearly all cases.

In summary, when a highway is widened and, as a result, moves closer to receptors, the localized level of MSAT emissions for the Build Alternative could be higher relative to the No Build Alternative, but this could be offset because of increases in speeds and reductions in congestion (which are associated with lower MSAT emissions). Also, MSATs are expected to be lower in other locations when traffic shifts away from them. However, on a regional basis, EPA's vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions that, in almost all cases, will cause region-wide MSAT levels to be significantly lower than today.

4.8.2.1 Indirect Effects

Indirect effects on air quality are not expected with the proposed project.

4.8.2.2 Mitigation

No air quality mitigation measures are proposed for the build alternatives.

4.9 Noise

4.9.1 Noise Abatement Criteria

FHWA and MDT identify noise impacts according to noise abatement criteria for land uses and zoning. These noise abatement criteria determine if traffic noise impacts would occur. According to MDT's traffic noise policy (MDT, 2001), traffic noise impacts occur at residences if predicted noise levels come within 1 dB of 67 dBA or if noise levels increase 13 dB by the design year (2025).

4.9.2 Noise Analysis Methodology

Noise levels are discussed in terms of both measured and predicted levels. Measured levels are actual noise levels examined at different locations throughout the study area that represent a sample of noise-sensitive sites. The measured level values were used to calibrate the noise model to make noise level predictions.

The FHWA-approved Traffic Noise Model, Version 1.0, predicted noise levels for the 60 noise-sensitive receptor locations along the project corridor for both 1999 and the design year (2025). Figures 2A, 2B, and 2C in *Appendix D* show the approximate receptor locations. These noise-sensitive receptor locations represent primary single residences and groups of

residences that lie within 150 m (492 ft) of the existing US 212 centerline and the proposed centerline for each of the six build alternatives. The location of each receptor was based on site observations and the proposed alternative alignments.

To help calibrate the Traffic Noise Model, values were added for receptor elevations; elevations for the existing US 212 roadway and the six build alternatives; and traffic volumes from 1999.

4.9.3 No Build Alternative

Thirty-seven of the 60 receptors measured were within 150 m (492 ft) of the existing alignment of US 212. Existing noise levels at 8 receptors representing 18 residences approached (within 1 dB) or exceeded the noise abatement criteria (67 dBA) (see Tables 4-6 and 4-7). By the design year (2025), growth in traffic volumes is expected to increase noise impacts to three additional receptors. Therefore, it is predicted that noise levels at 11 receptors representing 27 residences would exceed the noise abatement criteria.

TABLE 4-6
Summary of Noise-Impacted Receptors

Alternative	Total Receptors[a]	Number of Impacted Receptors/ Residences Under Existing Conditions	Number of Impacted Receptors/ Residences in 2025	Net Change in Impacted Residences	Right-of-Way Takes
No Build	37	8/18	11/27	+9	NA
Alternative 1	10	0/0	5/5	+5	1
Alternative 2	19	1/1	11/17	+16	1
Alternative 3A	31	6/16	5/4	-12	8
Alternative 3B	34	7/17	3/2	-15	8
Alternative 5A	10	1/1	4/4	+3	1
Alternative 5B (Preferred)	9	1/1	3/3	+2	2

[a]Within 150 m (492 ft) of the existing or proposed centerline.
Notes: NA = Not applicable

4.9.3.1 Indirect Effects

With the No Build Alternative, increases in expected traffic levels and subsequent noise levels might displace or modify the development patterns of residential, business, and commercial properties.

4.9.3.2 Mitigation

No noise mitigation measures are proposed for the No Build Alternative.

TABLE 4-7
Receptors and Traffic Noise Levels for Alternatives Based on 105 km/h (65 mph)
Bold *denotes a value that approaches or exceeds noise impact criteria.*

BSA Receptor ID Number	Fig. No.[a]	Description	Existing	No Build (2025)	Alternative 1 (2025)	Alternative 2 (2025)	Alternative 3A (2025)	Alternative 3B (2025)	Alternative 5A (2025)	Alternative 5B (Preferred) (2025)
1-R49W	2A	Residence	58	59	**66**	-	-	-	-	-
1-R52E	2A	Residence	42C	-	**68**	-	-	-	-	-
1-R53E	2A	Residence	42c	-	**60**	-	-	-	-	-
1-R177W	2B	Residence	53d	-	**67**	-	-	-	**67**	**67**
1-R179E	2B	Residence	53d	-	**71**	-	-	-	**71**	**71**
1-R225E	2C	Residence	56	57	62	64	-	-	62	62
1-R227W	2C	Residence	62	63	61	61	-	-	61	61
1-R230W	2C	Residence on Wilkins	58	59	60	61	62	62	60	60
1-R231E	2C	Residence	62	63	Take	Take	Take	Take	Take	Take
1-R232W	2C	Residence on Wilkins	54	55	60	62	63	63	60	60
2-R5W	2A	Residence	**66**	**68**	**-**	**72**	-	-	**72**	Take
2-R21W	2A	Residence	42	**-**	**-**	**72**	**-**	-	-	-
2-R82E	2B	Residence	47	**-**	**-**	**60**	**-**	-	**60**	**60**
2-101W	2B	Residence	47	**-**	**-**	**62**	-	-	-	-
2-R106E	2B	Residence	47	**-**	**-**	**61**	-	-	-	-
2-R107E	2B	Residence	47	**-**	**-**	**70**	-	-	-	-
2-R108E	2C	Residence	47	**-**	**-**	**64**	-	-	-	-
2-R109E	2C	Residence	47	**-**	**-**	58	-	-	-	-
2-R124E	2C	3 residences on Vista Lane	45	**-**	**-**	**60**	-	**-**	-	-

TABLE 4-7
Receptors and Traffic Noise Levels for Alternatives Based on 105 km/h (65 mph)
Bold *denotes a value that approaches or exceeds noise impact criteria.*

BSA Receptor ID Number	Fig. No.[a]	Description	Existing	No Build (2025)	Alternative 1 (2025)	Alternative 2 (2025)	Alternative 3A (2025)	Alternative 3B (2025)	Alternative 5A (2025)	Alternative 5B (Preferred) (2025)
2-R126E	2C	5 residences on Vista Lane	45	-	-	**64**	-	-	-	-
2-R127W	2C	Residence	45	-	-	**63**	-	-	-	-
2-R128E	2C	Residence	45	-	--	**63**	-	-	-	-
2-R136E	2C	Residence	58	-	--	64	-	-	-	-
3A-R68E	2A	Residence	54	56	-	58	62	-	-	-
3A-R91E	2A	Residence	48	-	-	-	**65**	-	60	-
3A-R97W	2A	Residence	48	-	-	-	**67**	-	-	-
3A-R112W	2A	Residence under construction	48	-	-	-	**75 (Take)**	-	-	-
3A-R113W	2A	Represents 2 residences	48	-	-	-	57	-	-	-
3A&3B-R124E	2B	Residence	53	-	-	-	60	60	-	-
3A&3B-R146W	2B	Residence	65	**66**	-	-	59	59	-	-
3A&3B-R154E	2B	Residence	53	54	-	-	**67**	**67**	-	-
3A&3B-R159E	2B	Possible residences in future subdivision	54	55	-	-	**68**	**68**	-	-
3A&3B-R163W	2C	Residence	61	62	-	-	Take	Take	-	-
3A&3B-R168W	2C	Residence west of US 212	64	65	-	-	58	58	-	-
3A&3B-R176W	2C	Residence west of US 212	63	64	-	-	57	57	-	-
3A&3B-R177W	2C	Residence west of US 212	65	**67**	-	-	**67**	60	-	-

TABLE 4-7
Receptors and Traffic Noise Levels for Alternatives Based on 105 km/h (65 mph)
***Bold** denotes a value that approaches or exceeds noise impact criteria.*

BSA Receptor ID Number	Fig. No.[a]	Description	Existing	No Build (2025)	Alternative 1 (2025)	Alternative 2 (2025)	Alternative 3A (2025)	Alternative 3B (2025)	Alternative 5A (2025)	Alternative 5B (Preferred) (2025)
3A&3B-R180W	2C	Represents 4 residences west of US 212	63	64	-	-	59	59	-	-
3A&3B-R182W	2C	Residence west of US 212	61	63	-	-	60	60	-	-
3A&3B-R184W	2C	Residence west of US 212	**66**	**67**	-	-	60	60	-	-
3A&3B-R190W	2C	Residence	61	62	-	-	**74 (Take)**	**74 (Take)**	-	-
3A&3B-R191W	2C	Represents 7 residences between 3A and 3B Station Numbers 189 and 194	64	**66**	-	-	59	59	-	-
3A&3B-R193E	2C	Residence	55	56	-	-	**69 (Take)**	**69 (Take)**	-	-
3A&3B-R194W	2C	Residence	**71**	**72**	-	-	61	61	-	-
3A&3B-R195E	2C	Residence	55	56	-	-	**71 (Take)**	**71 (Take)**	-	-
3A&3B-R197W	2C	Represents 8 residences between 3A and 3B Station Numbers 194 and 199	**67**	**69**	-	-	59	59	-	-
3A&3B-R198W	2C	Residence	**71**	**72**	-	-	60	60	-	
3A&3B-R200W	2C	Represents 3 residences between 3A and 3B Station Numbers 199+50 and 201	**68**	**69**	-	-	62	62	-	-
3A&3B-R202W	2C	Represents 2 residences between 3A and 3B Station Numbers 202 and 203	**67**	**69**	-	-	60	60	-	-

TABLE 4-7
Receptors and Traffic Noise Levels for Alternatives Based on 105 km/h (65 mph)
***Bold** denotes a value that approaches or exceeds noise impact criteria.*

BSA Receptor ID Number	Fig. No.[a]	Description	Existing	No Build (2025)	Alternative 1 (2025)	Alternative 2 (2025)	Alternative 3A (2025)	Alternative 3B (2025)	Alternative 5A (2025)	Alternative 5B (Preferred) (2025)
3A&3B-R204E	2C	Residence	55	57	-	-	**74 (Take)**	**74 (Take)**	-	-
3A&3B-R207W	2C	Represents 3 residences between 3A and 3B Station Numbers 206 and 208	62	63	-	-	58	58	-	-
3A&3B-R211E	2C	Residence	55	57	-	-	**74 (Take)**	**74 (Take)**	-	-
3B-R19E	2A	Residence	58	59	-	-	-	60	-	-
3B-R21E	2A	Residence	61	62	-	-	-	61	-	-
3B-R22E	2A	Residence	60	61	-	-	-	60	-	-
3B-R23E	2A	Residence	64	65	-	-	-	Take	-	-
3B-R27W	2A	Residence	58	59	**-**	**-**	**-**	**67**	-	-
3B-R30W	2A	Residence	58	59	-	-	-	64	-	-
3B-R30E	2A	Represents 3 Silesia residences east of US 212	61	62	-	-	-	56	-	-
3B-R32E	2A	Residence	**67**	**68**	**-**	**-**	**-**	60	-	-
No Build-R42W		Residence west of US 212	57	58	-	-	-	-	-	-

[a]Fig. No. = Figure number in *Appendix D, Noise Figures*, showing the location of the Big Sky Acoustics (BSA) Receptor ID.

4.9.4 Build Alternatives

Noise impacts are specific to each build alternative. However, the build alternatives would divert part of the traffic from the PTW. This diversion would lower the noise impacts along the PTW.

4.9.4.1 Indirect Effects

With the proposed project, changes to traffic patterns and subsequent noise levels might displace or modify the development patterns of residential, commercial, and business properties. The noise levels at the noise-impacted receptors evaluated would be lower than with the No Build Alternative for all alternatives except Alternative 2.

4.9.4.2 Mitigation

When traffic noise impacts are predicted, abatement measures need to be considered. Potential abatement measures include:

- Modifying the proposed alternative roadway designs
- Construction of noise barriers or berms
- Traffic management through reducing speed limits or restricting certain vehicle types

According to MDT's *Traffic Noise Analysis and Abatement: Policy and Guidance* (2001), the abatement measures must be reasonable and feasible. Barriers or berms must provide a minimum 6 dBA reduction in noise levels to be considered feasible. However, the evaluation of other abatement measures to determine if they are feasible is subjective. Note that MDT's traffic noise policy (2001) does not address property values or valuation.

The following paragraphs discuss reasonable and feasible noise abatement measures. A final decision on the installation of the abatement measures will be made upon completion of the project's final design and the associated public involvement process with the affected landowners. Barriers will not be constructed if, in accordance with MDT policy, the final cost-effectiveness index calculations (based on final design and current costs) indicate the barriers are not cost-effective or if a majority of landowners at the specific, affected areas do not support the barrier installation. Barriers will be constructed if the final cost-effectiveness index calculations (based on final design and current costs) indicate the barriers are cost-effective and if a majority of landowners at the specific, affected areas support the barrier installation.

Design Modifications. Reducing the proposed roadway width would not reduce the predicted traffic noise level. Even if a 4-m (13-ft)-wide center turn lane were used instead of the proposed 11-m (36-ft)-wide center median as evaluated, the difference in noise levels would be less than 1 dBA. Therefore, noise impacts would still be predicted for the build alternatives. In other words, roadway width reduction is not a feasible abatement measure.

Maximizing the distance between noise receptors and the proposed alternatives reduces noise impacts. This concept was considered during the initial determinations related to locating the build alternatives. Once potential noise impacts were quantified and weighed against other environmental, economic, social, and cultural impacts, alignment adjustments were optimized to address noise levels.

Barriers and Berms. To be effective, noise barriers or berms must be continuous and block the direct line-of-sight between the roadway and a residence. The need for driveways to access residences and access roads limits the functionality (location and continuation) of barriers and berms.

Traffic Management. Restricting certain vehicle types (such as trucks) from the road and limiting the time of day that certain vehicles might use the road are not feasible noise abatement measures for US 212. Since the road is a rural primary arterial, such restrictions would limit access by trucks to the agricultural properties along it. Also, US 212 is part of the NHS. A main function of the NHS is to provide efficient transportation routes for commercial transport, including domestic and international freight carriers.

Reducing the speed limit by 8 km/h (5 mph) to 16 km/h (10 mph) might reduce traffic noise levels by approximately 1 dBA. If a 1 dBA reduction of noise levels was *possible*, the number of noise-impacted receptors might be reduced. However, traffic noise impacts would still exist. At this time, the effect of a lower speed limit on the predicted traffic L_{eq}(h) noise levels has *not* been determined for the build alternatives. However, a reduced speed limit would contribute to increased congestion, frustrated drivers, and difficult enforcement. These results would not satisfy the stated Purpose and Need for transportation improvements. Therefore, reducing the speed limit is impractical.

4.9.4.3 Alternative 1—Far West Bench

Ten receptors were measured that were within 150 m (492 ft) of the proposed centerline of Alternative 1. Noise levels at none of the 10 receptors exceeded the noise criteria (see Table 4-6 and *Appendix D*). By the design year (2025), noise levels at five receptors (representing five residences) are predicted to approach or exceed the noise impact criteria.

One residence (receptor 1-R231E), which is not one of the five impacted receptors, might be relocated due to right-of-way acquisition (Table 4-7).

The proposed new bridge for crossing the existing railroad tracks at approximately Station 228+50 (see *Appendix D*) would act as a partial noise barrier between the new roadway and some of the receptors, reducing traffic noise to those receptors. The traffic noise model predictions accounted for the location of the new bridge and its barrier effects.

4.9.4.4 Alternative 2—Near West Bench

Nineteen of the noise receptors measured were within 150 m (492 ft) of the proposed centerline of Alternative 2 (see Table 4-6 and *Appendix D*). Predicted noise levels at one residence (receptor 2-R5W) exceeded the 67 dBA criteria because of the traffic noise on

US 212. By the design year (2025), traffic noise impacts are predicted at 11 of the receptors representing 17 residences because noise levels increased by more than 13 dBA at eight of the receptors and exceeded the 67 dBA criterion at the three other receptors (Table 4-7).

One residence (receptor 1-R231E), which is not one of the 11 impacted receptors, might be relocated due to right-of-way acquisition (Table 4-7).

The proposed new bridge for crossing the existing railroad tracks at approximately Station 155+00 (see *Appendix D*, Figure 2C) would act as a partial noise barrier between the new roadway and some of the receptors, reducing traffic noise to those receptors. The traffic noise model predictions accounted for the location of the new bridge and its barrier effects.

4.9.4.5 Alternative 3A—Near Existing Alignment

Thirty-one of the noise receptors measured were within 150 m (492 ft) of the proposed centerline of Alternative 3A (Table 4-6). Noise levels on existing US 212 exceeded the traffic noise criteria for 6 of the noise receptors (representing 16 residences) (see *Appendix D*). By the design year (2025), noise levels at five of the receptors (representing four residences and one future development site) are predicted to exceed the noise impact criteria. However, these five receptors are not the same as the six receptors currently impacted. In other words, while 4 residences would be impacted by traffic noise by 2025, the 16 residences currently impacted by traffic noise on the existing alignment would no longer be affected. That is, a net of 12 fewer residences would be affected by traffic noise.

If the rights-of-way for eight receptors (residences) are acquired (Table 4-7) and they are relocated, these residences would not be impacted by noise and not included in the preceding paragraph’s discussion.

The proposed new bridge for crossing the existing railroad tracks at approximately Station 122+00 (see *Appendix D*, Figure 2B) would act as a partial noise barrier between the new roadway and some of the receptors. The proposed new road cut near receptors

NXA-R112W and NXA-R113W would also act as a partial noise barrier between the new roadway and some of the receptors. The traffic noise model predictions accounted for the location of the new bridge and road cut and their barrier effects.

4.9.4.6 Alternative 3B—Near Existing Alignment

Thirty-four of the noise receptors measured were within 150 m (492 ft) of the proposed centerline of Alternative 3B (see Table 4-6 and *Appendix D*). Because they share much of the same alignment, 24 of these noise receptors are common with Alternative 3A. Noise levels on existing US 212 exceeded the traffic noise criteria for 7 of the noise receptors (representing 17 residences). By the design year (2025), three of the receptors (representing two residences and one future development site) are predicted to exceed the noise impact criteria. However, these three receptors are not the same as the seven receptors impacted under existing conditions. In other words, while 2 residences would be impacted by traffic noise by 2025, the 17 residences impacted under existing conditions by traffic noise on the

existing alignment would no longer be affected. That is, a net of 15 fewer residences would be affected by traffic noise.

If the rights-of-way for eight receptors (residences) are acquired (Table 4-7) and they are relocated, these residences would not be impacted by noise and not included in the preceding paragraph's discussion. Seven of the receptors are the same as those displaced by Alternative 3A.

4.9.4.7 Alternative 5A—Combined West Bench

Ten of the noise receptors measured (representing 10 residences) were within 150 m (492 ft) of the proposed centerline of Alternative 5A (see Figure 3-3 in *Chapter 3, Affected Environment*). The noise levels on existing US 212 exceeded the traffic noise criteria for one residence (receptor 2-R5W). By the design year (2025), noise levels at four of the receptors (representing four residences, including receptor 2-R5W) are predicted to exceed the noise impact criteria (Tables 4-6 and 4-7).

One residence (receptor 1-R231E), which is not one of the four impacted receptors, might be relocated due to right-of-way acquisition (Table 4-7).

4.9.4.8 Alternative 5B—Combined West Bench (Preferred)

Nine of the noise receptors measured (representing nine residences) were within 150 m (492 ft) of the proposed centerline of Alternative 5B (preferred) (see Figure 3-3 in *Chapter 3, Affected Environment*). The noise levels on existing US 212 exceeded the traffic noise criteria for one residence (receptor 2-R5W, the same receptor as in Alternative 5A). By the design year (2025), noise levels at three of the receptors (representing three residences) are predicted to exceed the noise impact criteria (Tables 4-6 and 4-7).

Two residences (receptors 2-R5W and 1-R231E), which are not included with the three impacted receptors, might be relocated due to right-of-way acquisition (Table 4-7).

4.10 Water Flow and Quality

4.10.1 No Build Alternative

The No Build Alternative would not cause additional impacts to surface water quality, groundwater quality, source water protection areas, or domestic wells over those resulting from existing conditions. The No Build Alternative would not increase the volume of stormwater runoff to surface water bodies. However, based on the projected increases in traffic volume, the potential pollutant loading in the stormwater would likely increase.

4.10.1.1 Indirect Effects

Indirect water flow effects are not expected with the No Build Alternative. Indirect effects to stormwater quality may occur with the No Build Alternative as a result of the projected increased traffic volumes.

The most common contaminants in highway runoff are heavy metals, inorganic salts, aromatic hydrocarbons, and suspended solids that accumulate on the road surface as a result of vehicle use and regular highway operation and maintenance activities. Ordinary operations and wear and tear of vehicles result in the dropping of oil, grease, rust, hydrocarbons, rubber particles, and other solid materials on the highway surface. Those materials can then be washed off the highway during rain or snow storm events. Based on the projected increases in traffic volume (please see Section 1.3.2.), pollutant loading in the stormwater would be expected to increase with the No Build Alternative.

4.10.1.2 Mitigation

No water flow and quality mitigation measures are proposed for the No Build Alternative.

4.10.2 Build Alternatives

Various water quality impacts would be common to the build alternatives. These impacts are related to the following resources:

- **Surface Water.** The surface water bodies in the project area have not been assigned TMDLs and are scheduled for the 2008-2012 completion cycle (MDEQ, 2006). Without TMDL information, quantitative impacts from stormwater runoff cannot be assessed using predicted loading rates of typical contaminants in highway runoff. Additional monitoring data collection and future TMDL development for the Clark Fork portion might require an assessment of impacts from stormwater runoff.
- **Groundwater.** The potential exists for direct adverse impacts on the quality of groundwater in the US 212 corridor. Various soluble constituents of highway runoff could percolate down through the soil and degrade the quality of the shallow alluvial aquifer. Because the Build Alternatives would increase the amount of impervious surface area, the volume of stormwater will increase. Along with the increase in impervious surface area, an increase in use of deicing agents would likely occur. Since heavy metals are typically bound to sediments, infiltration of heavy metals into the groundwater is not anticipated. It is expected that the build alternatives could each have the same potential impacts on groundwater quality.
- **Source Water Protection Areas.** Within the US 212 corridor, only one public water supply well (PWSID 00741) has a Source Water Protection Plan on file with the MDEQ. The build alternatives would involve reconstruction within the well inventory area of Fort Rockvale Restaurant and Lounge. However, none of the build alternatives would involve reconstruction within that well’s 100-ft control zone. Since the Fort Rockvale Restaurant

and Lounge well is located in a confined aquifer and has a very low susceptibility to contaminants, adverse impacts are not expected.

4.10.2.1 Indirect Effects

Indirect effects from the proposed project might include:

- Modifying water quality conditions by improving the capture of stormwater runoff, which would reduce direct flows into surface waters.
- Slightly improving the protection of source water by using upgraded surface water filtration and capture methods to reduce the amount of road-related contaminants reaching groundwater.

4.10.2.2 Mitigation

Various mitigation efforts would be common to the build alternatives. These include the following measures:

- **Restoring Domestic Water.** If domestic wells were displaced by the proposed project, domestic water would be restored to the affected properties. The manner in which this would be accomplished would be determined on a case-by-case basis.
- **Conducting Studies to Avoid Impacts to the Water Table.** Subsurface excavation to a depth sufficient to impact groundwater is not anticipated with implementation of the proposed project. However, if a situation arises that would entail excavation to a depth that might intersect the water table, mitigation measures would be implemented so that groundwater flow, including groundwater flow that supports springs, would not be impacted by the proposed project.
- **Seeding the Project Area.** Seeding would be provided in accordance with MDT Standard Specifications. Disturbed areas within MDT right-of-way or easements will be seeded with desirable plant species, as recommended and determined feasible by the MDT Botanist. This action would be in accordance with MCA 7-22-2152 and 60-2-208, and MDT would develop revegetation guidelines that the contractor would have to follow. These specifications would likely include instructions for seeding methods, dates, mix components, and the types and amounts of mulch and fertilizer.
- **Managing Highway Runoff Contaminants**. Four management measures have been identified as effective means for removing contaminants such as salt and deicing agents from highway runoff. These measures are vegetative controls, wet detention basins, infiltration systems, and wetlands (TRB, 2000). Of these measures, the best mitigation tool for attenuating pollutant loading from highway runoff along the US 212 corridor would be vegetative control. A permanent desirable vegetation community would be established over landform surfaces disturbed by construction in the US 212 corridor. Seeding would be provided in accordance with MDT Standard Specifications. Disturbed areas within MDT right-of-way or easements will be seeded with desirable plant species, as recommended and

determined feasible by the MDT Botanist. Vegetative control would be the most cost-effective tool available for removal of contaminants from highway runoff.

- **Creating an Erosion Control and Sediment Plan.** An erosion control and sediment plan in compliance with the Montana Pollutant Discharge Elimination System regulations (ARM 17.30.1301 et seq.) would be created and submitted to MDEQ's Water Quality Division to minimize erosion and sedimentation during and following construction. Best management practices (BMPs) would be used in the design of this plan.

Table 4-8 summarizes the water-related impacts of the build alternatives.

4.10.2.3 Alternative 1—Far West Bench

Alternative 1 would have one bridge crossing and four large culvert crossings (Table 4-8). The bridge crossing at Rock Creek and the culvert crossing at Farewell Creek would provide direct access for pollutants to enter these streams. The three remaining crossings would provide indirect access, through water conveyance, to the Yellowstone River. Although the pollutant access risk to streams would be low with just three crossings, the risk of transport would be high because of the short transport distance from these crossings to Rock Creek, Farewell Creek, and the Yellowstone River.

TMDLs have yet to be established for water bodies crossed by or in proximity to Alternative 1. However, as the longest alternative, Alternative 1 would have a larger surface area for contributing more stormwater runoff, higher loading rates, and potential impacts. Combined with the short transport distances, there would be a moderate potential for stormwater runoff impacts to receiving water bodies.

Alternative 1 would displace an estimated three domestic wells, which is fewer than would be displaced with Alternatives 3A, 3B, 5A, and 5B (preferred).

TABLE 4-8
Summary of Water-Related Impacts

Impacts	Alt. 1	Alt. 2	Alt. 3A	Alt. 3B	Alt. 5A	Alt. 5B (Preferred)
Number of stream crossings	2	1	1	1	1	1
Number of water conveyance crossings	3	8	7	3	5	5
Number of domestic wells displaced	3	3	14	12	5	5
Number of public water supplies impacted	None	None	None	None	None	None
Groundwater impacts	None of the alternatives would increase heavy metals in the groundwater. All the alternatives have potential to increase soluble nutrients and salts in the groundwater.					

4.10.2.4 Alternative 2—Near West Bench

Alternative 2 would have nine water-body crossings, including one stream crossing and various ditch and canal crossings. This would be the largest number of crossings associated with one alignment. The crossing at Farewell Creek would provide direct access for pollutants to enter the stream. The multiple crossings at Free Silver Ditch, Smith Ditch, White Horse Canal, Mason Canal, and some smaller, unknown ditches would provide indirect access through water conveyance to the Yellowstone River and the Clarks Fork Yellowstone River. The risk of pollutants entering surface water would be highest with Alternative 2 because of the large number of crossings. However, the risk of pollutants reaching the Yellowstone River or Clarks Fork Yellowstone River would be lower than with most of the build alternatives because transport distances would be longer before reaching the rivers, allowing more particle-bound pollutants an opportunity to settle out.

Stormwater runoff would be less than with Alternative 1 because Alternative 2 would have one of the shortest alignments and, thus, a smaller surface area. However, Alternative 2 would have nine possible stream, ditch, and canal crossings that could transport stormwater pollutants to the Yellowstone River. In summary, Alternative 2 would have a higher likelihood of polluting water bodies.

An estimated three wells would be displaced with Alternative 2, less than with all the other build alternatives except for Alternative 1.

4.10.2.5 Alternative 3A—Near Existing Alignment

Alternative 3A would have eight water-body crossings, including one stream crossing and various ditch and canal crossings. The crossing at Farewell Creek would provide direct access for pollutants to enter the stream. The other crossings would provide indirect access through water conveyance to the Yellowstone River. The access risk to surface water would be high with Alternative 3A because of the large number of crossings. However, the risk of pollutants reaching streams would be lower than with most of the other build alternatives because transport distances would be longer before reaching the Yellowstone River, allowing more particle-bound pollutants an opportunity to settle out.

The length of the Alternative 3A alignment would be longer than the majority of the build alternatives. The larger surface area associated with the Alternative 3A alignment combined with the large number of crossings would yield higher loading rates and the greatest potential for stormwater runoff impacts to receiving water bodies.

The Alternative 3A alignment would displace an estimated 14 domestic wells, which is more than with any other build alternative.

4.10.2.6 Alternative 3B—Near Existing Alignment

Alternative 3B would have the fewest water-body crossings. The four crossings would include one stream crossing and three ditch and canal crossings. The crossing at Farewell Creek would provide direct access for pollutants to enter the stream. The other crossings would provide

indirect access through water conveyance to the Yellowstone River. The risk of direct discharge of pollutants to surface water would be low with Alternative 3B because of the small number of crossings. The risk of pollutants reaching the Yellowstone River would also be lower than with most of the other build alternatives because transport distances would be longer before reaching the river, allowing more particle-bound pollutants an opportunity to settle out.

Since Alternative 3B would be the shortest alignment with a moderate number of crossings, it is anticipated that, of the build alternatives, it would cause the least amount of stormwater runoff impacts to receiving water bodies.

An estimated 12 wells would be displaced with Alternative 3B, which would be just 1 well less than with Alternative 3A.

4.10.2.7 Alternative 5A—Combined West Bench

Alternative 5A would have an estimated six water-body crossings, including one stream crossing and various ditch and canal crossings. The crossing at Farewell Creek would provide direct access for pollutants to enter the stream. The multiple crossings at Free Silver Ditch, Smith Ditch, White Horse Canal, Mason Canal, and some smaller unknown ditch crossings would provide indirect access through water conveyance to the Yellowstone River and the Clarks Fork Yellowstone River. The risk of direct discharge of pollutants to surface water would be high with Alternative 5A because of the large number of crossings. The risk of pollutants reaching the Yellowstone River or Clarks Fork Yellowstone River would be lower than with most of the other build alternatives because transport distances would be longer before reaching the rivers, allowing more particle-bound pollutants an opportunity to settle out.

A moderate length and fewer crossings characterize the Alternative 5A alignment. Therefore, it is anticipated that Alternative 5A would cause low to moderate stormwater runoff impacts to receiving water bodies.

An estimated five wells would be displaced with Alternative 5A, causing moderate impacts.

4.10.2.8 Alternative 5B—Combined West Bench (Preferred)

Alternative 5B (preferred), which would be almost identical to Alternative 5A with respect to water-body crossings, length, and well displacement, would impact water quality in a similar manner.

4.11 Wetlands

4.11.1 No Build Alternative

Wetlands would not be impacted greater than existing conditions with the No Build Alternative.

4.11.1.1 Indirect Effects

Indirect effects on wetlands are not expected with the No Build Alternative.

4.11.1.2 Mitigation

No wetland mitigation measures are proposed for the No Build Alternative.

4.11.2 Build Alternatives

In addition to discussions specific to each build alternative, this section includes information about the following topics:

- Placement of Fill Materials
- Formal Wetland Delineations
- Preliminary Wetland Delineations and Evaluations
- Wetland, Riparian, and Aquatic Areas Affected
- Indirect effects
- Mitigation

4.11.2.1 Placement of Fill Materials

The majority of the direct impacts on jurisdictional and non-jurisdictional wetland and riparian communities and other Waters of the U.S. would be caused by the placement of fill materials required for highway construction. Wetland functional values would be adversely affected, especially for those alignments that were not located adjacent to US 212's PTW. These functional losses would include wildlife disturbance from noise (during roadway construction and operation) and habitat fragmentation (where wetlands were bisected by roads).

4.11.2.2 Formal Wetland Delineations

Wetlands and wetland impacts have been delineated based on the conceptual (approximately 30 percent) design that is available at this early stage of the design process. As the design process continues and as additional avoidance, minimization, and mitigation strategies are evaluated, potential impacts may change slightly. Jurisdictional determinations made in this document are preliminary. Coordination will continue with the COE and final jurisdictional determinations will be made in conjunction with the COE at the time of permitting.

4.11.2.3 Preliminary Wetland Delineations and Evaluations

To comply with CWA Section 404(b)(1), build alternatives for the proposed project were laid out on paper and then staked in the field. Preliminary wetland delineations and evaluations using MDT's MWAM were then completed along the build alignments.

Adjustments to Alignments. Those areas of alignments with wetland or other Waters of the U.S. impacts were adjusted to avoid as many impacts as practicable. (See Figure 3-5 for the locations of the wetlands discussed.)

- **Alternative 1.** Within Alternative 1, the relocation of US 310 was adjusted to minimize impacts to wetland WL5.
- **Alternative 2.** This alternative was adjusted to minimize impacts to wetland WL3.
- **Alternatives 3A and 3B.** Adjustments to combined Alternatives 3A and 3B were considered and rejected because the impacts were minor and not certain to occur for wetlands WL9, WL11, and WL12.
- **Alternative 3A.** This alternative was adjusted to minimize impacts to wetland WL17. Although alignment adjustments were considered for wetlands WL18, WL19, and WL21, they were abandoned because of their proximity to paralleling canals.
- **Alternatives 5A and 5B (Preferred).** Alternatives 5A and 5B (preferred) were located after the initial wetland delineation. These alternatives were specifically located to avoid impacts to wetlands WL18 and WL19.
- **Alternative 5B (Preferred).** This alternative was located to minimize impacts to wetland WL17.

It was not possible to avoid impacts to wetland WL5 because it is located at the start of most of the build alternatives. At that point, the new alignment would be tied into the existing alignment and the roadbed would be widened.

Removal of Alternative 4–East Bench from Consideration. Alternative 4 would have crossed the Clarks Fork Yellowstone River twice. Alternative 4 was removed from further consideration because it lacked agency and public support and it had the potential for substantial environmental impacts. Dropping Alternative 4 avoided potentially substantial impacts on jurisdictional wetlands and other Waters of the U.S.

4.11.2.4 Wetland, Riparian, and Aquatic Areas Affected

Table 4-9 summarizes wetland, riparian, and aquatic areas and estimated impacts of each build alternative. Jurisdictional determinations shown in the table are preliminary. Final jurisdictional determinations will be made in conjunction with the COE at the time of permitting.

TABLE 4-9
Potential Area and Type of Wetland and Other Waters of the U.S. Present Within Each Roadway Alternative—Wetland, Riparian, and Aquatic Areas Affected

			Potential Area Affected[a] (ha) Roadway Alignment					
Wetland/ Riparian #	**Wetland/Riparian Type (after Cowardin)[b]**	**Total Area Present (ha)**	**Far West Bench Alternative 1**	**Near West Bench Alternative 2**	**Near Existing Alignment Alternative 3A**	**Near Existing Alignment Alternative 3B**	**Combined West Bench Alternative 5A**	**Combined West Bench Alternative 5B (Preferred)**
Expected Jurisdictional Wetlands								
WL1	PFO spring & channel	0.8	0.3	0	0	0	0	0
WL2	PSS	0.2	0	<0.1	0	0	0	0
WL3	RUB	0.2	0	<0.1	0	0	0	0
WL4	PEM	0.4	0	0.2	0	0	0	0
WL5	PEM & PSS	1.9	0	0.5	0	0.5	0.5	0.5
WL6	PEM	0.1	0	0	0	0	0	0
WL8	PEM	0.3	0	0	0.1	0.1	0	0
WL9	PEM &PSS	0.7	0	0	<0.1	<0.1	0	0
WL11	PEM & PSS	0.1	0	0	0	0	0	0
WL12	PEM	5.5	0	0	0.1	0.1	0	0
WL14	PEM & PSS & PFO	6.5	0.1	0.1	0.1	0.1	0.1	0.1
WL15	PSS	0.3	0	0	0	0	0	0
WL16	PEM	<0.1	0	0	0	0	0	0
WL17	PFO	0.6	0	0	0.1	0	<0.1	0
WL18	PSS & PFO	0.5	0	0	0.3	0	0	0
WL19	PFO	0.6	0	0	0.1	0	0	0
WL20	PEM	0.1	0	0	0	0	0	0
WL21	PFO	0.3	0	0	0.1	0	0	0
WL22	PEM	1.0	0	0	0	0	0	0
WL23	PEM & PSS	0.8	0	0	0	0	0	0
WL24	Rock Creek – PFO	2.8	0.1	0	0	0	0	0
WL25	Rock Creek – RUB	0.2	0.1	0	0	0	0	0
Jurisdictional Total[c]		**23.8**	**0.5**	**0.8**	**1.0**	**0.9**	**0.6**	**0.6**
Expected Non-jurisdictional Wetlands								
WL7	PEM	<0.1	0	0	<0.1	0	0	0
WL10	PEM	0.1	0	0	0	0	0	0
WL13	PEM & PFO	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Non-jurisdictional Total[c]		**0.1**	**<0.1**	<0.1	**0.1**	**<0.1**	**<0.1**	**<0.1**

TABLE 4-9
Potential Area and Type of Wetland and Other Waters of the U.S. Present Within Each Roadway Alternative—Wetland, Riparian, and Aquatic Areas Affected

			Potential Area Affected[a] (ha) Roadway Alignment					
Wetland/ Riparian #	**Wetland/Riparian Type (after Cowardin)[b]**	**Total Area Present (ha)**	**Far West Bench Alternative 1**	**Near West Bench Alternative 2**	**Near Existing Alignment Alternative 3A**	**Near Existing Alignment Alternative 3B**	**Combined West Bench Alternative 5A**	**Combined West Bench Alternative 5B (Preferred)**
Expected Other Waters of the U.S.								
White Horse Canal		--	1.3	0.1	0.40	0.1	0.9	0.9
Mason Canal		--	0	0.1	0.1	0.1	0	0
Davis Ditch		--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Smith Ditch		--	0	0.1	0	0.1	0.1	0.1
Free Silver Ditch		--	<0.1	0.2	0	0	0.1	0.1
Other Waters of the U.S. Total[c]		--	**1.4**	**0.5**	**0.5**	**0.3**	**1.1**	**1.1**
Total Expected Wetlands and Other Waters of the U.S.		**23.9**	**2.0**	**1.3**	**1.6**	**1.2**	**1.7**	**1.8**

General Note: These area computations are preliminary and a formal wetland delineation has not been conducted. Other considerations are listed below.

[a]Figures shown for affected areas are based on neat-line measurements at the outline of the roadway earthwork. Additional amounts might need to be added to account for disturbance due to construction activities. Affected areas are within known construction limits and do not include potential effects on private lands outside of construction limits.

[b]Cowardin wetland types: PFO = palustrine forested, PSS = palustrine scrub-shrub, PEM = palustrine emergent wetland, RUB = riverine unconsolidated bottom.

[c]Totals may not match column sums due to rounding.

4.11.2.5 Indirect Effects

The proposed project might cause some level of indirect effects on the habitat of wetland-dependent species, such as the northern leopard frog, depending on the amount and type of wetland habitat impacted. Typical indirect effects would include changes to hydrology of existing wetlands, sediment input to wetlands located outside of the right-of-way, and shading from overhead structures. Implementation of measures to avoid and minimize impacts to wetlands would be implemented to avoid indirect impacts. These may include sediment controls during construction or installation of culverts or design of fill placement to avoid changing existing hydrology. Shading is most likely to occur where new bridges are constructed. Quantification of shading effects will not be possible until the design process has progressed to the point where size and location of all structures over or adjacent to wetlands have been identified.

4.11.2.6 Mitigation

Except as provided under CWA Section 404(b)(1) guidelines, the COE and the EPA would not allow dredged or fill material to be discharged into wetlands unless appropriate and practicable steps were taken to avoid or minimize potential adverse impacts on the wetlands. See CWA Section 404(b)(1) guidelines and *Appendix E*.

To complete the compliance with the CWA Section 404(b)(1) guidelines, mitigation is proposed to compensate for unavoidable wetland impacts. The *Memorandum of Agreement Between the Department of the Army and the Environmental Protection Agency Concerning the Determination of Mitigation Under the Clean Water Act Section 404(b)(1) Guidelines* (EPA and Department of the Army, 1990) requires that wetland mitigation be addressed in the following sequence:

- **Avoid.** Avoid potential wetland impacts to the maximum extent practicable.
- **Minimize.** Minimize unavoidable wetland impacts to the extent appropriate and practicable.
- **Compensate.** Compensate for unavoidable adverse wetland impacts that remain after all appropriate and practicable minimization has been required.

These wetland mitigation measures are discussed below:

- **Avoidance and Minimization.** Wetland impacts were avoided and minimized to the extent practicable when setting the location of the proposed alignment and reducing proposed fill slopes. To minimize sedimentation and construction disturbance it is recommended that construction in wetlands occur when these sites are as “dry” as possible. The CWA Section 404 process requires that identified wetlands under COE jurisdiction be avoided to the extent practicable and that impacts be minimized. Once final design has occurred and wetland impacts can be quantified, a CWA Section 404 permit would be sought from the COE. At that time, compensatory mitigation for impacts to wetlands would be identified and commitments would be made.
- **Compensation.** Compensatory mitigation for COE jurisdictional wetland loss includes:
  - Onsite wetland restoration or creation opportunities under review include areas located in the floodplain of the Clarks Fork Yellowstone River that are either adjacent to the river or in or adjacent to a former meander or oxbow of the river (see Figure 3-5 in *Chapter 3, Affected Environment*).
  - Offsite mitigation would be considered, if needed. Potential offsite mitigation options currently include the MDT Stillwater, Wagner Pit, Vince Ames, Kindsfather, and/or D H Ranch Mitigation Reserves. At the time of construction, other mitigation sites may be available. MDT will coordinate with the appropriate agencies to determine where offsite mitigation, if necessary, will be carried out.
  - Temporary, construction-related impacts to wetlands within the right-of-way and construction easement areas would be restored to original contours as soon as practicable following disturbance.

  To minimize disturbance to wetlands and other Waters of the U.S., the following measures would be implemented:

  - Construction equipment operating in wetlands would be limited to that which is needed to perform the necessary work. Width of the construction right-of-way would be minimized to the extent practicable in wetland and stream areas.

– A revegetation plan would be developed for the proposed project that would be followed by the contractor. The plan would include specifications on seeding mixes; seeding dates; types and amounts of mulch and fertilizer; and seed mix components. The plan would also be submitted to the Carbon County Weed District Supervisor and the Yellowstone County Weed District Supervisor for review. Disturbed wetland and streamside areas would be revegetated with desirable species as specified by MDT at the earliest practicable date following disturbance and would comply with Montana Pollutant Discharge Elimination System regulations (ARM 17.30.1301 et seq.) and CWA Section 404 permit conditions.

It should be noted that the COE does not require mitigation to compensate for impacts to non-jurisdictional wetland and riparian areas. However, it is FHWA policy to mitigate for these impacts.

Table 4-10 provides information about potential onsite wetland mitigation sites. Figure 3-5 shows the locations of these sites.

TABLE 4-10
Approximate Area of Potential Onsite Wetland Mitigation Sites

Potential Wetland Mitigation Site	**Area**
WM-A	6.6 ha (16.5 ac)
WM-B	4.4 ha (11.0 ac)
WM-C	7.0 ha (17.5 ac)
WM-D	3.1 ha (7.5 ac)
WM-E	2.7 ha (6.5 ac)
WM-F	2.7 ha (6.5 ac)
WM-G	3.4 ha (8.5 ac)
WM-H	5.6 ha (14.0 ac)

See Figure 3-5 (*Chapter 3, Affected Environment*) for locations.

No additional wetland mitigation measures specific to each build alternative are proposed.

4.11.2.7 Alternative 1—Far West Bench

As shown in Table 4-9, the dominant jurisdictional wetland types impacted by Alternative 1 would be palustrine forested, scrub-shrub, and emergent wetlands. Approximately 0.5 ha (1.5 ac) of jurisdictional wetlands, <0.1 ha (<0.5 ac) of non-jurisdictional wetlands, and 1.4 ha (3.5 ac) of other Waters of the U.S. would be impacted. The dominant non-jurisdictional wetland types impacted by Alternative 1 would be palustrine forested and emergent wetlands.

4.11.2.8 Alternative 2—Near West Bench

As shown in Table 4-9, the dominant jurisdictional wetland types impacted by Alternative 2 would be palustrine scrub-shrub and emergent wetlands. Approximately 0.8 ha (2.0 ac) of

jurisdictional wetlands, <0.1 ha (<0.5 ac) of non-jurisdictional wetlands, and 0.5 ha (1.0 ac) of other Waters of the U.S. would be impacted. The dominant non-jurisdictional wetland types impacted by Alternative 1 would be palustrine forested and emergent wetlands. Alternative 2 would have a larger impact on jurisdictional wetlands than the other build alternatives.

4.11.2.9 Alternative 3A—Near Existing Alignment

As shown in Table 4-9, the dominant jurisdictional wetland types impacted by Alternative 3A would be palustrine scrub-shrub and emergent wetlands (Table 4-9). Approximately 1.0 ha (2.5 ac) of jurisdictional wetlands, <0.1 ha (<0.5 ac) of non-jurisdictional wetlands, and 0.5 ha (1.5 ac) of other Waters of the U.S. would be impacted. The dominant non-jurisdictional wetland types impacted by Alternative 3A would be palustrine forested and emergent wetlands.

4.11.2.10 Alternative 3B—Near Existing Alignment

As shown in Table 4-9, the dominant jurisdictional wetland type impacted by Alternative 3B would be palustrine emergent wetlands. Approximately 0.9 ha (2.0 ac) of jurisdictional wetlands, <0.1 ha (<0.5 ac) of non-jurisdictional wetlands, and 0.3 ha (1.0 ac) of other Waters of the U.S. would be impacted. The dominant non-jurisdictional wetland types impacted by Alternative 3B would be palustrine forested and emergent wetlands. This represents the smallest impact to jurisdictional wetlands of the build alternatives.

4.11.2.11 Alternative 5A—Combined West Bench

As shown in Table 4-9, the dominant jurisdictional wetland types impacted by Alternative 5A would be palustrine scrub-shrub and emergent wetlands. Approximately 0.6 ha (1.5 ac) of jurisdictional wetlands, <0.1 ha (<0.5 ac) of non-jurisdictional wetlands, and 1.1 ha (2.5 ac) of other Waters of the U.S. would be impacted. The dominant non-jurisdictional wetland types impacted by Alternative 5A would be palustrine forested and emergent wetlands.

4.11.2.12 Alternative 5B—Combined West Bench (Preferred)

As shown in Table 4-9, the dominant jurisdictional wetland types impacted by Alternative 5B (preferred) would be palustrine scrub-shrub and emergent wetlands. Approximately 0.6 ha (1.5 ac) of jurisdictional wetlands, <0.1 ha (<0.5 ac) of non-jurisdictional wetlands, and 1.1 ha (3.0 ac) of other Waters of the U.S. would be impacted. The dominant non-jurisdictional wetland types impacted by Alternative 5B would be palustrine forested and emergent wetlands.

4.12 Water Bodies and Aquatic Resources

4.12.1 No Build Alternative

Existing impacts to water bodies and aquatic resources would continue with the No Build Alternative. Existing, ongoing effects include aquatic habitat limitations from chronic dewatering of Rock Creek near the US 310 bridge crossing, which is unrelated to the highway or the proposed project. Current impacts from highway operations include highway runoff containing residuals from operating automobiles and trucks and, during the winter, runoff containing de-icing salts. These effects would continue with operation of the existing highway.

4.12.1.1 Indirect Effects

Indirect effects on water bodies and aquatic resources are not expected with the No Build Alternative.

4.12.1.2 Mitigation

No water body and aquatic resource mitigation measures are proposed for the No Build Alternative.

4.12.2 Build Alternatives

4.12.2.1 Erosion Potential and Runoff

Effects on water bodies and aquatic resources were assessed by estimating erosion potential and runoff from the operation of new facilities. The US 310 crossing of Rock Creek with Alternative 1 is anticipated to have the greatest potential for directly affecting aquatic resources in the project area. These would primarily be temporary impacts due to construction activities and are discussed in *Section 4.22.12, Construction Impacts Related to the Build Alternatives*.

Since other perennial water bodies in the area of the realignments, including other reaches of Rock Creek, the Clarks Fork Yellowstone River, and the Yellowstone River, are not immediately adjacent to the proposed highway realignments, they would not be directly affected by the proposed project.

4.12.2.2 Highway Operations

After construction was completed and reclamation of disturbed sites was successful, the impacts from highway operations and maintenance (such as highway runoff containing residuals from automobile and truck operation and, during the winter, runoff containing

de-icing salts) would increase with operation of the reconstructed highway because of the continued operation and maintenance of the PTW.

4.12.2.3 Indirect Effects

Indirect effects on water bodies adjacent to the project area could occur through discharge of sediment and other pollutants via ephemeral and intermittent drainages crossed by alternatives. An increase in the discharge of pollutants could affect aquatic resources. In addition, improved capture and filtration of surface water runoff would reduce the direct input of highway-related contaminants into surface water, slightly improving water quality compared to existing conditions.

4.12.2.4 Mitigation

Water body and aquatic resource mitigation measures such as stormwater controls and the implementation of BMPs during and after construction are proposed for the build alternatives. These measures would be designed and constructed to prevent contamination from entering water bodies. Provisions listed in permits and authorizations from MFWP, COE, and MDEQ would be followed.

The implementation of these standard mitigation and coordination measures would minimize, avoid, or prevent the potential occurrence of adverse impacts on aquatic habitat, fish, or other aquatic resources in Rock Creek, the Yellowstone River, or the Clarks Fork Yellowstone River.

4.12.2.5 Alternative 1—Far West Bench

Additional impacts from sediment or contaminants entering Farewell Creek are possible as discussed in *Section 4.12.2.2, Highway Operations*.

Construction of a new bridge over Rock Creek would result in the localized loss of aquatic and riparian habitat. There would also be crossings of the Free Silver Ditch, Mason Canal, and White Horse Canal. It is not expected that the operation of the canals would be affected.

The loss of riparian habitat adjacent to the new bridge would be important in smaller drainages, such as Rock Creek, because of the many influences such habitat has on the quality of aquatic habitat. Murphy and Meehan (1991) reported that riparian habitat can form a protective canopy that provides overhead cover for fish and that moderates the extreme effects of air temperatures during summer (helping to cool streams) and winter (helping to insulate streams). Riparian habitat also:

- Helps reduce soil erosion
- Filters sediment before it enters Rock Creek from adjacent lands
- Stabilizes the stream banks
- Allows for the formation of undercut banks that provide cover for fish

The loss of riparian habitat would also reduce litter-fall into the stream (decreasing nutrients and food for invertebrates) and woody debris deposition (decreasing instream cover).

4.12.2.6 Alternative 2—Near West Bench

There would be crossings of the Free Silver Ditch, Mason Canal, White Horse Canal, and Smith Ditch. It is not expected that the operation of the canals would be affected.

4.12.2.7 Alternative 3A—Near Existing Alignment

Impacts associated with Alternative 3A would be the same as those described for Alternative 2.

4.12.2.8 Alternative 3B—Near Existing Alignment

Impacts associated with Alternative 3B would be the same as those described for Alternative 2.

4.12.2.9 Alternative 5A—Combined West Bench

Impacts associated with Alternative 5A would be the same as those described for Alternative 2.

4.12.2.10 Alternative 5B—Combined West Bench (Preferred)

Impacts associated with Alternative 5B (preferred) would be the same as those described for Alternative 2.

4.13 Vegetation

4.13.1 No Build Alternative

Vegetation resources that currently exist in the project area would remain the same with natural variation from year to year depending on weather, fire, and other conditions in the project area. As residential and commercial development continues to expand over time, the extent and quality of the local vegetation are expected to decline and the noxious weeds population could expand into the newly disturbed area.

4.13.1.1 Indirect Effects

Indirect effects on vegetation are not expected with the No Build Alternative.

4.13.1.2 Mitigation

No vegetation mitigation measures are proposed for the No Build Alternative.

4.13.2 Build Alternatives

Because of the direct relationship between wildlife habitat and vegetation, impacts to plant communities and impacts from invasion of noxious weeds and exotic plants are addressed in *Section 4.14.2.4*, *Habitat Loss*, of the Wildlife Resources section.

4.14 Wildlife Resources

4.14.1 No Build Alternative

Wildlife habitat and populations that currently exist in the project area would remain the same with natural variation from year to year, depending on habitat conditions in the project area. As residential and commercial development continues to expand, the extent and quality of local wildlife habitat and associated wildlife populations are expected to decline. Traffic volumes are expected to increase over time under the No Action alternative, which is expected to result in a potential increase in wildlife mortality and increased traffic noise.

4.14.1.1 Indirect Effects

Indirect effects on wildlife resources are not expected with the No Build Alternative.

4.14.1.2 Mitigation

No wildlife resource mitigation measures are proposed for the No Build Alternative.

4.14.2 Build Alternatives

The proposed build alternatives would be located in habitats that have already been substantially altered by human activities. As a result, the types of impacts described would likely occur; however, the severity of the impacts would likely be reduced. Generally, the same types of impacts on wildlife and habitat could occur with each of the build alternatives. Those common impacts are described in *Sections 4.14.2.1* through *4.14.2.5*. Mitigation measures common to the build alternatives are described in *Section 4.14.2.6*. Potential impacts specific to each of the build alternatives are described in *Sections 4.14.2.7* through *4.14.2.12*.

4.14.2.1 Human Presence and Vehicle Use of the New Road

Human presence can disturb wildlife, depending on the sensitivity of a particular species to human intrusion. Construction of the roadway in a new location will result in human activity in areas that are currently disturbed infrequently. Wildlife species sensitive to human presence may cease using an area, while species habituated to human presence would not be affected.

The proposed road design calls for the construction of a new four-lane divided highway on a new alignment with the existing two-lane road remaining open. Animal-vehicle collisions are

likely to occur on the new road. These collisions could impact a wide variety of species, ranging from small animals to big game.

Complex interactions of many factors influence the frequency of animal-vehicle collisions on a roadway. A primary factor is wildlife population density. Some other factors include traits inherent to individual wildlife species, such as mobility, food preferences, behavior, reproductive patterns and movement. Other factors may be related to wildlife habitat, such as the location of resources like water, food, cover, breeding areas, or migration routes. Additional factors apply to the road itself, including road design (width, alignment, grade, clear zone width, number of lanes), vehicle speed, and traffic volume. Also affecting the frequency of animal-vehicle collisions are factors related to driver characteristics and behaviors, including vehicle type, attentiveness, and reaction time.

Once the new road is open, traffic volume is expected to decrease on the existing two-lane road because of a majority of traffic shifting to the new four-lane highway. Under the preferred alternative, the proposed four-lane highway will be located out of the river bottom in sagebrush/grassland habitat, while the existing two-lane road is located in a river bottom/agricultural habitat. It is likely that these two habitat types harbor different wildlife species with distinct behavior patterns that may create differing animal-vehicle collision rates. However, animal-vehicle collisions occurring on the new four-lane highway may counteract the potential decrease expected to be seen on the existing two-lane road. The extent to which animal-vehicle collisions rate may differ with the addition of the new road compared to the current conditions is uncertain at this time.

MDT records documented 63 animal mortalities from 1997 to 2006, averaging 6.3 per year on the existing two-lane road. The majority of the documented collisions over these 10 years involved mule deer (39.7 percent), white-tailed deer (31.7 percent), and raccoons (17.5 percent). White-tailed deer and raccoons are less likely to inhabit the sagebrush/grassland habitat adjacent to the proposed new four-lane highway location and are therefore less likely to be involved in vehicle-animal collisions. A potential shift to collisions with the wildlife species that inhabit the sagebrush/grassland habitat adjacent to the new four-lane highway could occur. Those species generally include mule deer, reptiles, upland game birds (sharp-tail grouse and gray partridge), and various small mammals.

The construction of the new four-lane highway is not expected to result in substantial increased impacts to the wildlife resources in the area. Ongoing impacts to wildlife associated with use of the existing two-lane road include collisions with a variety of animals and displacement from noise. These impacts are expected to continue under the preferred alternative.

4.14.2.2 Utilities

Overhead power lines can pose problems for a variety of wildlife species. Raptors and other bird species occasionally are electrocuted when they collide with overhead power lines. Overhead power lines can benefit some raptors, such as the American kestrel (*Falco sparverious*), by providing hunting perches.

For the benefit of large raptors, power lines within MDT right-of-way that are relocated as a result of this project would be raptor-proofed in accordance with MDT policy.

4.14.2.3 Fences

Fences would likely be constructed along both sides of the new right-of-way. Depending on the design, the fences might act as barriers to movement by some species.

4.14.2.4 Habitat Loss

- **Agricultural Habitat.** The estimated area of irrigated agricultural and dryland habitat that would be expected to be impacted ranges from approximately 30 ha (74 ac) to 90 ha (222 ac) for the build alternatives.
- **Wetland and Riparian Habitat.** Permanent wetland and riparian habitat impacts would likely affect a variety of species, including small mammals, neotropical migrant birds, and amphibians, including the Northern Leopard Frog. Estimated wetland impacts are discussed in *Section 4.11* and summarized in Table 4-9.
- **Native/Non-Native Vegetated Uplands.** Alternatives 1, 2, 5A, and 5B would include upland habitat with both native and non-native vegetation. The estimated area of the native/non-native vegetated mix uplands habitat that may be impacted ranges from approximately 15 ha (37 ac) to 35 ha (86 ac) for the build alternatives.
- **Noxious Weeds and Exotic Plants.** Noxious weeds and exotic plants can destroy native habitat if disturbed areas are not properly revegetated.

4.14.2.5 Indirect Effects

Potential indirect effects of road development and use include habitat fragmentation and noise.

- **Habitat Fragmentation.** Wildlife avoidance of roads can affect dispersal and breeding behavior.

Roads can displace some species from otherwise useable habitat and can be a source of stress.

- **Noise.** Noise can disturb wildlife along roads. Traffic noise can interfere with songbirds' ability to hear mating calls, recognize warning calls, and identify calls by juveniles. The area of potential disturbance would vary by species.

4.14.2.6 Mitigation

When determining mitigation measures for unavoidable wildlife resource and habitat impacts, MDT must balance a number of factors, including public safety; transportation design standards and requirements; geotechnical, hydraulic, and right-of-way issues; public concerns; costs; and the functional value of impacted resources. Discussions with resource agencies and MDT identified no specific problem areas in terms of big game vehicle collisions. Therefore, no locations requiring big game crossings were identified. In addition

to the mitigation measures discussed in *Section 4.22.14,* proposed wildlife resource and habitat mitigation measures for the build alternatives would include the following:

- **Wildlife Crossings.** At this time, no specific locations have been identified as potential or likely wildlife crossings. However, as the design process evolves, MDT will continue to evaluate appropriateness and necessity of wildlife crossing mitigation measures such as signage, wildlife detection systems, over-sized culverts, etc.
- **Fencing.** During right-of-way negotiations with adjacent landowners, MDT will encourage installation of appropriate, wildlife-friendly fencing. It should be noted that the landowner generally determines the type of fencing ultimately installed.
- **Revegetation.** To reduce the spread and establishment of noxious weeds and to re-establish permanent vegetation, disturbed areas within MDT right-of-way or easements will be seeded with desirable plant species as soon as practicable, as recommended and determined feasible by the MDT Botanist.
- **Reclamation.** Reclamation of disturbed construction zones, such as ditches and embankments, would be in accordance with MDT's *Erosion and Sediment Control Best Management Practices Manuals.*

No additional mitigation measures specific to individual build alternatives are proposed.

4.14.2.7 Alternative 1—Far West Bench

The right-of-way for Alternative 1 would pass through approximately 28.00 ha (69.20 ac) of irrigated farmland, 61.53 ha (152.05 ac) of dryland agricultural habitat. Approximately 35.4 ha (87.5 ac) of native/non-native vegetated upland habitat would be affected by construction of Alternative 1. This alternative would have greater potential for impacting upland grasslands and rare remnants of sagebrush grasslands than the other build alternatives.

Impacts related to habitat fragmentation and noise would be relatively high compared to the other alternatives because the Alternative 1 alignment would pass through lands that have been least altered by human activity compared to farmed lands in the project area.

Fewer collisions with deer, and occasionally moose, would be expected than with the other alternatives because most of the alignment would be located outside of the river floodplain. The relatively larger area of impacted native/non-native vegetated upland habitat might result in higher mortality rates for small- and medium-sized mammals and reptiles than with the other alternatives.

Approximately 2.0 ha (5.0 ac) of wetland and riparian habitat would be lost during construction of Alternative 1. Emergent wetlands and associated wildlife habitat located at the north end of the project area near the existing US 212 and near the railroad overpass would also be lost.

Approximately 3.2 km (2 mi) of the Alternative 1 alignment would be located along the top of a bench above the Yellowstone River. The bench is farmed and the river bottom is heavily grazed. However, neither the bench nor the adjacent Yellowstone River bottom is currently

subject to regular human activity and noise. Use of the road along the Alternative 1 alignment would disturb a variety of birds and other wildlife.

Alternative 1 would also cross three draws with ephemeral streams. Water only flows in these drainages during large precipitation events or snowmelt. While these drainages do not support much woody riparian vegetation, filling in these drainages and replacing them with culverts could interrupt wildlife travel routes.

4.14.2.8 Alternative 2—Near West Bench

With Alternative 2, approximately 21.2 ha (52.5 ac) of irrigated agricultural habitat, 44.4 ha (109.5 ac) of dryland agricultural habitat, and 29.4 ha (72.5 ac) of native/non-native vegetated upland habitats would be affected. Alternative 2 would cross Farwell Creek, an intermittent stream, and three draws with ephemeral streams and affect 1.3 ha (3.5 ac) of jurisdictional wetlands and waters of the U.S. Potential impacts would be similar to those described for Alternative 1.

4.14.2.9 Alternative 3A—Near Existing Alignment

Alternative 3A would pass through approximately 46.8 ha (115.5 ac) of irrigated agricultural habitat. Neither dryland farmland nor native/non-native vegetated upland habitats would be affected by this alternative. About 1.6 ha (4.0 ac) of jurisdictional wetland and waters of the U.S. would be impacted by Alternative 3A. Collisions with deer and animals such as muskrats and raccoons would likely be highest with Alternatives 3A and 3B because of their location in the river bottom. Other potential impacts would be similar to those described for Alternative 1.

4.14.2.10 Alternative 3B—Near Existing Alignment

Alternative 3B would pass through approximately 29.2 ha (72.0 ac) of irrigated agricultural habitat and approximately 1.2 ha (3.0 ac) of jurisdictional wetland and waters of the U.S. Neither dryland farmland nor native/non-native vegetated upland habitats would be affected by this alternative. Potential impacts on wildlife and habitat would be similar to those described for Alternative 3A.

4.14.2.11 Alternative 5A—Combined West Bench

Alternative 5A would pass through approximately 38.4 ha (95.0 ac) of irrigated farmland, 39.2 ha (97.0 ac) of dryland agricultural habitat, and 17.2 ha (42.5 ac) of native/non-native vegetated upland habitats. Alternative 5A would cross Farwell Creek, an intermittent stream, and four draws with ephemeral streams and affect approximately 1.7 ha (4.5 ac) of jurisdictional wetland and waters of the U.S. Potential impacts would be similar to those described for Alternative 1.

4.14.2.12 Alternative 5B—Combined West Bench (Preferred)

Alternative 5B (preferred) would pass through approximately 35.1 ha (87.0 ac) of irrigated farmland, 45.6 ha (112.5 ac) of dryland agricultural habitat, and 31.9 ha (79.0 ac) of native/non-native vegetated upland habitats. Alternative 5B (preferred) would cross Farwell Creek, an intermittent stream, and four draws with ephemeral streams and approximately 1.8 ha (4.5 ac) of jurisdictional wetland and waters of the U.S. Potential impacts would be similar to those described for Alternative 1.

4.15 Threatened and Endangered Species and State Species of Concern

4.15.1 No Build Alternative

Impacts to threatened and endangered species or state species of concern are not known in the project area. There would be no change to existing conditions with the No Build Alternative.

4.15.1.1 Indirect Effects

Indirect effects on species listed as threatened and endangered or on state species of concern are not expected with the No Build Alternative.

4.15.1.2 Mitigation

No threatened and endangered species or state species of concern mitigation measures are proposed for the No Build Alternative.

4.15.2 Build Alternatives

The effects determinations for ESA-listed species under the Preferred Alternative (Alternative 5B) are presented in Table 4-11. The rationale for the effects determinations follows the table in *Sections 4.15.2.1 and 4.15.2.2*.

TABLE 4-11
Preferred Alternative Threatened and Endangered Species Summary and Determination of Effect.

Common / Scientific Name	Status	Known Distribution in Project Corridor	Determination of Effect
Black-footed ferret (*Mustella nigripes*)	Endangered	Ferrets have not been introduced in the vicinity of the proposed project and they are not known to occur in the project area.	No Effect
Canada lynx (*Lynx canadensis)*	Threatened	The project area does not include suitable habitat for Canada lynx and lynx are not expected to occur in the area.	No Effect
Gray wolf (*Canis lupus)*	Experimental, Non-essential	Wolves are not known to occur in the immediate project area. The project area does not support large ungulate herds and has relatively high levels of human activity.	No Effect
Whooping crane (*Grus americana*)	Endangered	One sighting documented during migration in southern Montana including 2 adults on the Yellowstone River, 1.5 miles west of the project area. Human activity levels in the project area would deter crane use. Movement of the road farther from the Clarks Fork of the Yellowstone River would also reduce potential impacts.	No Effect

4.15.2.1 Threatened and Endangered Species or State Species of Concern Not Affected

- **Whooping Crane.** There was a sighting of two adult whooping cranes on the Yellowstone River, 1.5 miles west of the project area in 2005. No whooping cranes have been reported in the Clarks Fork of the Yellowstone drainage where the project is located. The project would be expected to have No Effect on whooping cranes for the following reasons. Whooping crane occurrence in the general project area is very irregular and only during migration. This project would impact very little potential whooping crane habitat and the wetlands that would be impacted are small, near the highway, and generally over ½ mile from the Clarks Fork of the Yellowstone River. Small wetlands near human activity are not attractive to migrating whooping cranes. The new alignment is moving away from the river bottom, where whooping cranes might fly, and into more upland areas. The project area along US 212 is more commercial and residential than the Yellowstone River area where the cranes were sighted. These levels of human activity are generally not conducive to use of an area by whooping cranes, which prefer sites with minimal human disturbance (Clark et al. 1989). Finally, this project would not affect wetlands associated with the Yellowstone River and would not be constructed in the Yellowstone River drainage, where the 2005 sighting occurred. One of several causes of whooping crane mortality is collisions with powerlines and barbed wire fences (Clark et al. 1989 and Olsen and Derrickson 1980). Some existing powerlines

within the MDT right-of-way would be relocated but no new lines would be constructed. Fences would likely be constructed along both sides of the new right-of-way. However, the poor quality of potential habitat in the project area, relatively high levels of human activity, and the lack of use of the area by whooping cranes suggests that collisions with powerlines or fences would not be expected to occur. Therefore, the effects determination for the whooping crane is No Effect.

- **Canada Lynx.** The project area does not include any suitable habitat for Canada lynx and lynx would not be affected by any of the alternatives.
- **Gray Wolf.** Wolves are not known to occur in the immediate project area. The project area does not support large ungulate herds and has relatively high levels of human activity. While occasional wolves may move through the area, it is very unlikely that a pack would establish in the project area. Neither existing wolf packs nor the larger wolf population of Montana would be affected by any of the alternatives.
- **Black-**footed Ferret. Ferrets have not been introduced in the vicinity of the proposed project and they are not known to occur in the project area. Therefore, black-footed ferrets would not be impacted by any of the alternatives.
- **Peregrine Falcon.** None of the build alternatives would cross the Clarks Fork of the Yellowstone River. Therefore, it is unlikely that construction of the proposed project would affect occasional use of the Clarks Fork of the Yellowstone River corridor by peregrine falcons.
- **Mountain Plover.** It appears unlikely that mountain plovers use the project area or would be impacted by construction of the proposed project.
- **Greater Sage-Grouse.** The project area includes a few small remnant stands of sagebrush, but does not include the large expanses of sagebrush required by this species. Also, human disturbance levels in the vicinity of the project area are too high for sage-grouse and this species is not expected to occur in the area. Therefore, greater sage-grouse would not be affected by any of the alternatives.
- **Black-Tailed Prairie Dog.** Since black-tailed prairie dogs have not been observed in the project area and abandoned prairie dog towns were not discovered, it is unlikely that this species would be impacted by construction of the proposed project.
- **Spiny Softshell.** Given the distance of the alignments from the Clarks Fork Yellowstone River, none of the build alternatives would result in adverse impacts on spiny softshells that occur in or immediately adjacent to the river.
- **Yellowstone Cutthroat Trout.** Yellowstone cutthroat trout generally would not be expected to use lower reaches of Rock Creek in the vicinity of the US 310 bridge crossing. Therefore, it is unlikely that this species would be impacted by construction of the proposed project.
- **Drummond's Hemicarpha.** Since the only suitable habitat in the project area is the Clarks Fork Yellowstone River, Drummond's hemicarpha would not be affected by the proposed project.

- **Swamp Milkweed.** Since swamp milkweed was not found during field surveys conducted from June 11 to 15, 2001, it is unlikely that this species would be impacted by construction of the proposed project.

4.15.2.2 Threatened and Endangered Species or State Species of Concern Potentially Affected

Threatened and endangered species or state species of concern or their habitat that might be affected by the build alternatives include the Baird's sparrow, barn owl, milk snake, the western hognose snake, the northern leopard frog, and the bald eagle. The milk snake, the western hognose snake, and the northern leopard frog have not been documented in the immediate project area. Section 3.15 discusses habitat suitability in the project area and nearby documented occurrences of these species.

- **Baird's Sparrow, Barn Owl, Milk Snake, Western Hognose Snake, and Northern Leopard Frog.** Impacts to suitable habitat for the milk snake, western hognose snake, and northern leopard frog are discussed in *Sections 4.11 and 4.14. Section 4.14* also discusses noise and animal-vehicle collisions, which may adversely affect these species.
- **Bald Eagle.** Direct impacts to bald eagles are not expected. Based on the application of construction-related mitigation measures for the build alternatives and on existing levels of current human activity in the project area, the proposed project would have "no effect" on wintering or nesting bald eagles.

4.15.2.3 Indirect Effects

One potential indirect effect of the proposed project on bald eagles could occur if the number of road-killed deer along the new highway increased, which is undetermined. Bald eagles often feed on ungulate carrion, especially during the winter. Any increase in the number of road-killed deer could attract bald eagles to the roadside, increasing their chance of being hit. MDT's road maintenance activities include timely removal of dead animals from traveled ways, shoulders, etc.

No other indirect effects on species listed as threatened and endangered or on state species of concern are expected with the proposed project.

4.15.2.4 Mitigation

Mitigation measures for construction impacts to threatened and endangered species or state species of concern related to the build alternatives are discussed in *Section 4.22.15*

4.16 Floodplains

4.16.1 No Build Alternative

The existing alignment currently intersects the 100-year floodplains of the Yellowstone River and the Clarks Fork Yellowstone River for approximately 1,200 m (3,937 ft) where they converge just south of Laurel. No additional impacts to the floodplain would be associated with the No Build Alternative.

4.16.1.1 Indirect Effects

Indirect effects on floodplains are not expected with the No Build Alternative.

4.16.1.2 Mitigation

No floodplain mitigation measures are proposed for the No Build Alternative.

4.16.2 Build Alternatives

In addition to discussions specific to each build alternative, this section includes information about the following topics:

- Evaluation of Encroachment into the Base Floodplain
- Assessment of Impacts to the 100-year Floodplains and Floodways
- Indirect Effects
- Mitigation

4.16.2.1 Evaluation of Encroachment into the Base Floodplain

E.O. 11988, *Floodplain Management*, and 23 CFR Part 650A, *Location and Hydraulic Design of Encroachments on Floodplains*, require an evaluation of project alternatives to determine the extent of encroachment into the base floodplain. A formal location hydraulic study was not completed for the Draft EIS. However, the following requirements for a location hydraulic study are discussed:

- Type and Extent of Floodplain Encroachments
- Alternatives to Longitudinal Encroachment
- Risks Associated with Implementation of the Proposed Action
- Impacts on Natural and Beneficial Floodplain Values
- Support of Probable Incompatible Floodplain Development
- Measures to Minimize Floodplain Impacts
- Measures to Restore and Preserve Natural and Beneficial Floodplain Values Impacted by the Proposed Action

The following sections address these topics generally. *Section 4.16.2.5* through *Section 4.16.2.10* provide more specific information.

Type and Extent of Floodplain Encroachments. Flood insurance rate maps from FEMA were used to identify and quantify impacts to the 100-year floodplains within the study area—Yellowstone River floodplain, Clarks Fork Yellowstone River floodplain, and Rock Creek floodplain (Figure 4-2). The type and extent of areas of floodplain encroachment associated with implementation of each alternative were conservatively estimated based on the extent of the proposed highway rights-of-way.

Two different types of floodplain impacts, longitudinal and transverse, were identified.

- **Longitudinal Impact.** A longitudinal impact or encroachment is located adjacent to the stream or river (typically less than 30 degree crossings).
- **Transverse Impact.** A transverse impact or encroachment crosses directly over a stream or river and its associated floodplains (typically 30 to 90 degree crossings) of streams, rivers, lakes, floodplains, and floodways. Transverse impacts generally have a higher probability of affecting the floodway of a stream or river.

Each of the build alternatives would result in longitudinal encroachment in 100-year floodplains, while implementation of Alternative 1 would also result in a transverse encroachment in the Rock Creek 100-year floodplain.

Alternatives to Longitudinal Encroachment. Alternatives to longitudinal encroachment have been evaluated but are not considered practicable due to roadway geometric design constraints. To the extent practicable, alignments associated with each alternative have been developed to minimize longitudinal encroachments.

Risks Associated with Implementation of the Proposed Action. Each of the proposed alternatives would result in longitudinal encroachment in 100-year floodplains that would cause minor changes in flood stage and flood limits. These changes would not result in significant adverse impacts on the natural and beneficial floodplain values (that is, a water surface elevation increase from the base flood elevation greater than 0.15 m [0.50 ft]) or significant changes in flood risk or damage. There would not be significant change in the potential for interruption or termination of emergency service or emergency evacuation routes. Therefore, it has been determined that the encroachments would not be significant and do not constitute incompatible floodplain development.

Table 4-12 summarizes impacts from encroachments in the 100-year floodplain of the Yellowstone River and Clarks Fork Yellowstone River associated with each alternative. Table 4-13 summarizes impacts from encroachments in the 100-year floodplain of Rock Creek.

TABLE 4-12
Summary of Yellowstone River and Clarks Fork Yellowstone River Floodplain Impacts

Alternative	Reference Post[a]	Floodplain Impact Type	Length	Area	Significance
Alternative 1	52.7 to 53.0	Longitudinal	550 m (1,804 ft)	1.1 ha (2.7 ac)	Not significant[b]
Alternative 2	52.7 to 53.0	Longitudinal	550 m (1,804 ft)	1.1 ha (2.7 ac)	Not significant
Alternative 3A[c]	52.7 to 53.0 52.7 to 52.9	Longitudinal	550 m (1,804 ft) 480 m (1,575 ft)	4.1 ha (10.1 ac)	Not significant
Alternative 3B[c]	52.7 to 53.0 52.7 to 52.9	Longitudinal	550 m (1,804 ft) 480 m (1,575 ft)	4.1 ha (10.1 ac)	Not significant
Alternative 5A	52.7 to 53.0	Longitudinal	550 m (1,804 ft)	1.1 ha (2.7 ac)	Not significant
Alternative 5B (Preferred)	52.7 to 53.0	Longitudinal	550 m (1,804 ft)	1.1 ha (2.7 ac)	Not significant

[a]Reference post is from the PTW.
[b]Using Montana State standards as a basis, "not significant" is defined as "a floodplain water surface increase of less than 0.15 m (0.50 ft)." To quantify the floodplain water-surface increase, hydraulic model simulations are necessary to compare the current and proposed 100-year water-surface elevations. Detailed hydraulic analyses, including development of model simulations, has not been performed for this study but will be completed during design of the project. The floodplain encroachments listed in this table are minimal and will not significantly decrease channel conveyance capacity. Based on these limited encroachments, the increase in water-surface elevations is expected to be minimal and therefore not significant.
[c]Alternative results in encroachments from both the mainline of the proposed highway and the PTW.

TABLE 4-13
Summary of Rock Creek Floodplain Impacts

Alternative	Reference Post[a]	Floodplain Impact Type	Length	Area	Significance
Alternative 1	42.6 to 42.7	Transverse	540 m (1,772 ft)	2.4 ha (5.9 ac)	Not significant[b]
Alternative 2	43.0	Longitudinal	160 m (525 ft)	0.2 ha (0.5 ac)	Not significant
Alternative 3A	42.6 to 43.1	Longitudinal	662 m (2,172 ft)	8.3 ha (20.5 ac)	Not significant
Alternative 3B	43.0	Longitudinal	160 m (525 ft)	0.2 ha (0.5 ac)	Not significant
Alternative 5A	43.0	Longitudinal	160 m (525 ft)	0.2 ha (0.5 ac)	Not significant
Alternative 5B (Preferred)	43.0	Longitudinal	160 m (525 ft)	0.2 ha (0.5 ac)	Not significant

[a]Reference post is from the PTW.
[b]Using Montana State standards as a basis, "not significant" is defined as "a floodplain water surface increase of less than 0.15 m (0.50 ft)." To quantify the floodplain water-surface increase, hydraulic model simulations are necessary to compare the current and proposed 100-year water-surface elevations. Detailed hydraulic analyses, including development of model simulations, has not been performed for this study but will be completed during design of the project. The floodplain encroachments listed in this table are minimal and will not significantly decrease channel conveyance capacity. Based on these limited encroachments, the increase in water-surface elevations is expected to be minimal and therefore not significant.

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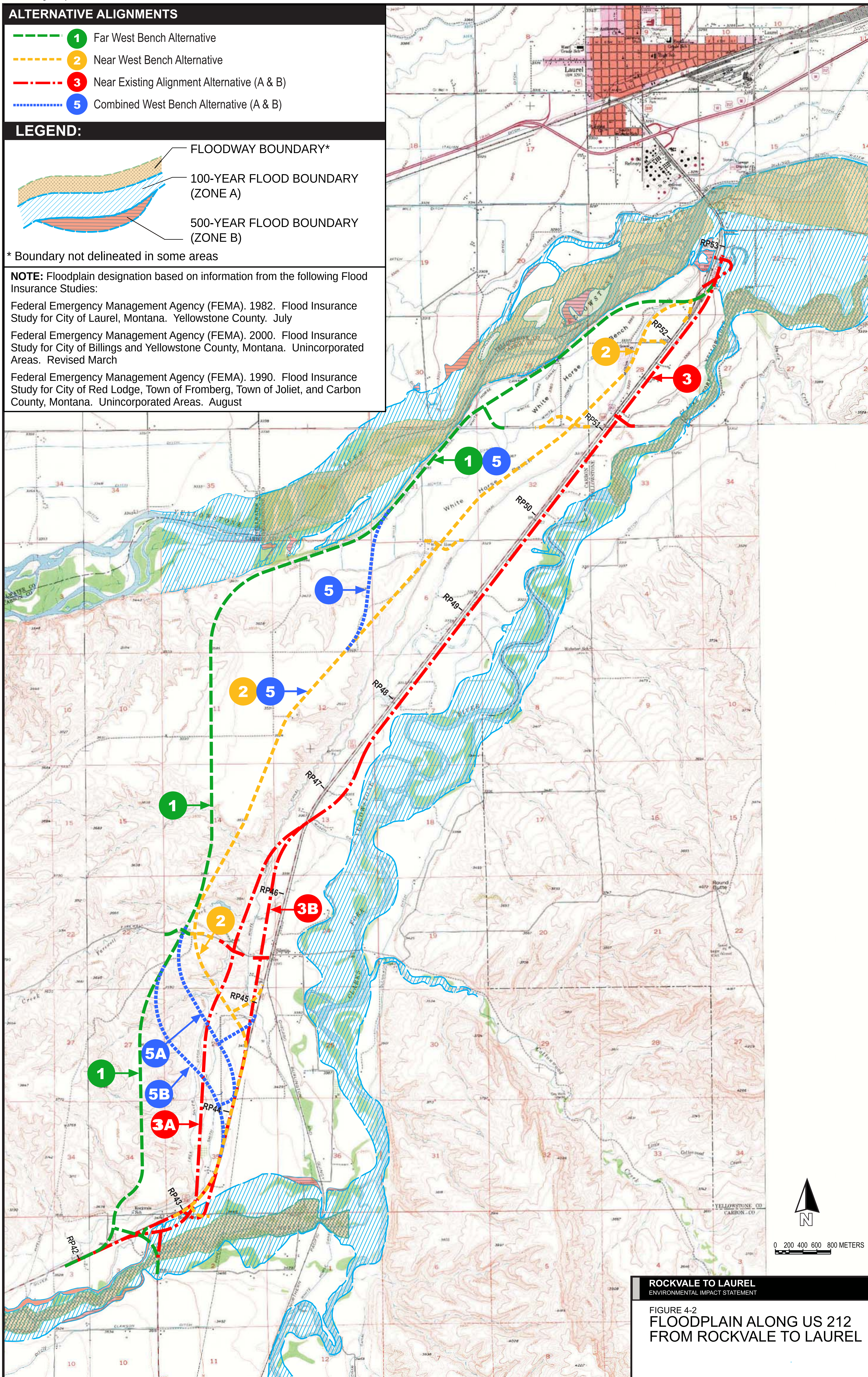

ROCKVALE TO LAUREL
ENVIRONMENTAL IMPACT STATEMENT

FIGURE 4-2
FLOODPLAIN ALONG US 212
FROM ROCKVALE TO LAUREL

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Impacts on Natural and Beneficial Floodplain Values. Impacts to the 100-year floodplain could occur through either of the following occurrences:

- A reduction of the flood-carrying capacity (conveyance) of the floodplain (for example, encroachment of fill, bridge piers)
- An increase in the total volume of water conveyed by the floodplain due to an increase in impervious area within the watershed

In general, impacts to floodplains can vary, depending on the elevation change as a result of the proposed roadbed. Elevation changes might have a levee effect, causing a change in the flood pattern by narrowing or channeling the floodplain. To evaluate these effects, a qualitative assessment of specific direct floodplain impacts would be conducted during final design of the alternative selected. This would include hydraulic modeling to simulate water surface profiles for each existing and proposed structure. The proposed project would be designed in compliance with E.O. 11988, which requires federal agencies to avoid direct or indirect support of floodplain development whenever a practicable alternative exists.

Support of Probable Incompatible Floodplain Development. Floodplain encroachments can occur either directly by construction of highway embankments or indirectly through support of incompatible floodplain development (any development that is not consistent with the community's floodplain development plan). No incompatible floodplain development is expected with the proposed project. Therefore, no additional encroachments are anticipated.

Measures to Minimize Floodplain Impacts. State and federal floodplain regulations provide guidelines on floodwater encroachment levels. Encroachment can be defined as the displacement of floodwaters caused by depositing fill material to bring the roadbed out of the floodplain. The area of the 100-year floodplain is divided into a floodway and a floodway fringe. The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment so that the 100-year flood can be carried without substantial increases in flood heights (23 CFR 650.105).

Of the build alternatives, only the Alternative 1 alignment might impact a floodway. Although prohibited in the floodway, construction or fill is allowable within the floodway fringe. However, the floodwater rise cannot exceed state or federal standards. The Montana State standards allow a 0.15 m (0.50 ft) rise and Federal Insurance Program standards allow a 0.31 m (1.00 ft) rise before a development impacts a floodplain and flood elevations. Potential impacts and restrictions are discussed further, as appropriate, in *Section 4.16.2.5* through *Section 4.16.2.10*.

Each of the proposed alternatives would result in minimal encroachments on the floodplain. Although these encroachments involve the floodplain, the impacts on human life, transportation facilities, and natural and beneficial floodplain values would not be significant and could be resolved with minimal efforts.

Measures to Restore and Preserve Natural and Beneficial Floodplain Values Impacted by the Proposed Action. Minimal efforts to address the impacts would consist of applying State of Montana drainage design standards to achieve results that would not increase or significantly change the flood elevations and/or limits.

4.16.2.2 Assessment of Impacts to the 100-year Floodplains and Floodways

Section 4.16.2.5 through *Section 4.16.2.10* assess impacts to the 100-year floodplains and floodways located within the proposed project vicinity, along with associated mitigation measures, as applicable.

The north end of the build alternative alignments would impact the 100-year floodplains of the Yellowstone River and the Clarks Fork Yellowstone River where these floodplains converge. The alignments might longitudinally impact approximately 1.1 ha (2.7 ac) of the floodplain. Impacts to floodways are not anticipated.

Since hydraulic models have not been developed for the alternative alignments, precise changes in flood heights cannot be determined at this stage of the proposed project.

4.16.2.3 Indirect Effects

Where encroachment into the floodplain is avoided, indirect effects on floodplains are not expected. However, if the proposed project encroaches on a floodplain or floodway, indirect effects to locally impacted areas might include modified distribution of floodplain vegetation or other floodplain-dependent species. Until hydraulic models are developed for the alternative selected, these indirect effects cannot be quantified.

No incompatible floodplain development is expected with the proposed project. Therefore, indirect effects that might result through support of incompatible floodplain development would be minimal.

4.16.2.4 Mitigation

In Montana, encroachment in a floodplain is limited to that which would cause an increase in flood heights of no more than 0.15 m (0.50 ft) (FEMA, 1990). To the extent practicable, floodplain and floodway impacts greater than 0.15 m (0.50 ft) would be avoided during the design of the alternative selected.

The proposed project would be designed in compliance with E.O. 11988, *Floodplain Management*. State of Montana drainage design standards would be applied to achieve results that would not increase or significantly change the flood elevations and/or limits.

To evaluate such things as levee effects, a qualitative assessment of specific direct floodplain impacts would be conducted during final design of the alternative selected. That assessment

would include hydraulic modeling to simulate water surface profiles for each existing and proposed structure.

Construction-related mitigation measures common to all the build alternatives are discussed in *Section 4.22.16, Floodplains*. Specific floodplain mitigation measures as applicable for each alternative are discussed in *Section 4.16.2.5* through *Section 4.16.2.10*.

4.16.2.5 Alternative 1—Far West Bench

Alternative 1 would longitudinally impact approximately 1.1 ha (2.7 ac) of the 100-year floodplain of the Yellowstone River and Clarks Fork Yellowstone River. The proposed interchange for US 310 would result in transverse impacts to the Rock Creek 100-year floodplain, encroaching on approximately 2.4 ha (5.9 ac). The total area of floodplain impacted by Alternative 1 would be approximately 3.5 ha (8.6 ac), which is intermediate in comparison with the other alternatives.

The bridge over Rock Creek associated with the US 310 interchange would span the Rock Creek floodway. Since Montana requires that floodways be kept free of encroachment so that a 100-year flood can be carried without substantial increase in flood heights, the bridge would have adequate clearance for the 100-year flood volume.

The proposed bridge design would avoid placing structures or fill within the floodway and would comply with Montana statutes specifying that such structures not increase water surface elevation from the base flood elevation greater than 0.15 m (0.50 ft). The bridge would also be designed with appropriate erosion control measures.

Due to the proposed bridge construction, a hydraulic analysis might be required for Rock Creek.

4.16.2.6 Alternative 2—Near West Bench

Alternative 2 would longitudinally impact approximately 1.1 ha (2.7 ac) of the 100-year floodplain of the Yellowstone River and Clarks Fork Yellowstone River. The intersection with Brush Road, associated with the southern portion of the Alternative 2 alignment near Rock Creek, would cause approximately 0.2 ha (0.5 ac) of longitudinal impacts to the Rock Creek 100-year floodplain. Alternatives 2, 5A and 5B (preferred) would have the least amount of total floodplain impacts (1.3 ha [3.2 ac]).

Alternative 2 would be designed and constructed in a manner that would not increase water surface elevation from the base flood elevation greater than 0.15 m (0.50 ft).

Impacts to floodways are not anticipated with Alternative 2.

4.16.2.7 Alternative 3A—Near Existing Alignment

Alternative 3A would longitudinally impact approximately 4.1 ha (10.1 ac) of the 100-year floodplain of the Yellowstone River and Clarks Fork Yellowstone River. The alignment

would cause approximately 8.3 ha (20.5 ac) of longitudinal impacts to the Rock Creek 100-year floodplain at the southern end of the alignment. The Alternative 3A alignment would impact the largest total area of floodplains (12.4 ha [30.6 ac]).

Alternative 3A would be designed and constructed in a manner that would not increase water surface elevation from the base flood elevation greater than 0.15 m (0.50 ft).

Impacts to floodways are not anticipated with Alternative 3A.

4.16.2.8 Alternative 3B—Near Existing Alignment

Alternative 3B would longitudinally impact approximately 4.1 ha (10.1 ac) of the 100-year floodplain of the Yellowstone River and Clarks Fork Yellowstone River. The intersection with Brush Road, associated with the southern portion of the Alternative 3B alignment near Rock Creek, would cause approximately 0.2 ha (0.5 ac) of longitudinal impacts to the Rock Creek 100-year floodplain. Floodplain impacts associated with Alternative 3B would be intermediate to the impacts associated with other build alternatives, affecting approximately 4.3 ha (10.6 ac) of floodplain.

Alternative 3B would be designed and constructed in a manner that would not increase water surface elevation from the base flood elevation greater than 0.15 m (0.50 ft).

Impacts to floodways are not anticipated with Alternative 3B.

4.16.2.9 Alternative 5A—Combined West Bench

Alternative 5A would longitudinally impact approximately 1.1 ha (2.7 ac) of the 100-year floodplain of the Yellowstone River and Clarks Fork Yellowstone River. The intersection with Brush Road, associated with the southern end of the Alternative 5A alignment near Rock Creek, would cause approximately 0.2 ha (0.5 ac) of longitudinal impacts to the Rock Creek 100-year floodplain. Alternatives 5A, 2, and 5B (preferred) would have the least amount of total floodplain impacts (1.3 ha [3.2 ac]).

Alternative 5A would be designed and constructed in a manner that would not increase water surface elevation from the base flood elevation greater than 0.15 m (0.50 ft).

Impacts to floodways are not anticipated with Alternative 5A.

4.16.2.10 Alternative 5B—Combined West Bench (Preferred)

Impacts associated with Alternative 5B (preferred) would be the same as those described for Alternative 5A.

Alternative 5B (preferred) would be designed and constructed in a manner that would not increase water surface elevation from the base flood elevation greater than 0.15 m (0.50 ft).

Impacts to floodways are not anticipated with Alternative 5B.

4.17 Cultural Resources

It has been determined that three sites in the project area are eligible for the NRHP:

- Rocky Fork Branch of the Northern Pacific Railroad (24CB1283/24YL1533)
- Free Silver Ditch (24CB1287)
- Main house of the Nutting Farmstead (24CB1642)

Section 4(f) of the Department of Transportation Act of 1966 is a special provision included to provide protection of public park and recreation lands, wildlife and waterfowl refuges, and historic sites. The FHWA will not approve any project that requires the use of any publicly owned public park, recreation area, or wildlife or waterfowl refuge, or any land from an historic site of national, state, or local significance unless:

1. There is no feasible and prudent alternative to the use, and
2. All possible planning to minimize harm resulting from such use is included.

Direct use of a Section 4(f) resource occurs when land is permanently incorporated into a transportation facility. Constructive use occurs when the transportation project does not incorporate land from a section 4(f) resource, but the project's proximity impacts are so severe that the protected activities, features, or attributes that qualify a resource for protection under Section 4(f) are substantially impaired. Substantial impairment occurs only when the protected activities, features, or attributes of the resource are substantially diminished.

Through consultation with the Montana State Historic Preservation Office (SHPO) during the Section 106 process, it was determined that the Free Silver Ditch, the Rocky Fork Branch of the Northern Pacific Railroad, and the Nutting Farmstead are eligible for listing on the National Register of Historic Places. For the purposes of Section 106 consultation, the SHPO concurred with the MDT finding that the proposed project would have "no effect" to historic resources. Those historic sites will not be permanently incorporated into the transportation facility, so no 4(f) "use" will occur with this project.

The Montana State Historic Preservation Office concurred with the determination on May 1, 2003 (see *Part II: Section 106 Determination of Effect* for the concurrence letters).

4.17.1 No Build Alternative

Cultural resources would not be impacted with the No Build Alternative.

4.17.1.1 Indirect Effects

Indirect effects on cultural resources are not expected with the No Build Alternative.

4.17.1.2 Mitigation

No cultural resource mitigation measures are proposed for the No Build Alternative.

4.17.2 Build Alternatives

The build alternatives will each cross the BNSF Railway (which was previously known as the Rocky Fork Branch of the Northern Pacific Railroad). All build alternatives except for Alternative 3B will cross the Free Silver Ditch. None of the alternatives will displace the main house of the Nutting Farmstead. These impacts would cause “No Effect” to the three historic sites. These impacts would not be considered a “use” of a Section 4(f) property.

4.17.2.1 Indirect Effects

Indirect effects on cultural resources are not expected with the proposed project.

4.17.2.2 Mitigation

No cultural resource mitigation measures are proposed for the build alternatives.

4.18 Hazardous Materials

4.18.1 No Build Alternative

The No Build Alternative would not involve hazardous materials in the project area.

4.18.1.1 Indirect Effects

Indirect effects related to hazardous materials are not expected with the No Build Alternative.

4.18.1.2 Mitigation

No hazardous material mitigation measures are proposed for the No Build Alternative.

4.18.2 Build Alternatives

Hazardous material impacts would be most likely during construction of the build alternatives. Therefore, they are discussed in *Section 4.22.18, Hazardous Materials*.

4.19 Visual Resources

The Visual Resources section includes information about the following topics:

- Visual Analysis Methodology
- No Build Alternative
- Build Alternatives

4.19.1 Visual Analysis Methodology

Regardless of the alignment, the build alternatives proposing reconstruction of US 212 would vary from the existing highway (the No Build Alternative) in three respects:

- The roadway design would be wider with more travel lanes
- Approaches to the new road would be limited
- The new design would change the physical appearance of the landscape, with the highway becoming a more dominant element

This section provides information about visual quality and visual effects.

4.19.1.1 Visual Quality

A predicted visual quality rating was developed for each of the build alternatives using FHWA methodology (FHWA, 1988). Visual quality ratings are based on the merits of three independent parameters: landscape unity, intactness, and vividness. The predicted ratings were developed by studying the proposed engineering cross-sections for design Alternative 1 (four lanes with 11-m [36-ft] median) to determine the amount of landscape alteration (particularly landforms) associated with the design. In addition, the change in the visual character resulting from the introduction of a roadway into the existing landscape was considered. Table 4-14 summarizes the predicted visual quality ratings, as well as the existing visual quality ratings determined for each alternative.

TABLE 4-14
Comparison Summary of Projected Visual Quality Ratings* for Alternative Alignments

Views	Existing Alignment	Alt. 1	Alt. 2	Alt. 3A	Alt. 3B	Alt. 5A	Alt. 5B (Preferred)
Views from the Road							
Existing Visual Quality	3.14	3.98	3.62	3.54	3.43	3.92	4.09
Proposed Visual Quality	3.14	3.48	3.13	3.16	3.05	3.48	3.59
Change	0.00	-0.50	-0.49	-0.38	-0.38	-0.44	-0.49
View of the Road							
Existing Visual Quality	2.74	4.00	3.54	2.61	2.75	3.19	3.19
Proposed Visual Quality	2.09	3.10	3.00	2.17	2.33	2.80	2.80
Change	-0.65	-0.90	-0.54	-0.44	-0.42	-0.39	-0.39
Overall Average							
Existing Visual Quality	2.94	3.99	3.58	3.07	3.09	3.56	3.64
Proposed Visual Quality	2.94	3.29	3.07	2.67	2.69	3.14	3.20
Change	0.00	-0.70	-0.51	-0.41	-0.40	-0.42	-0.44

*The visual quality rating is a scale from 0 to 7, with 7 being the highest visual quality rating possible (that is, 7 = High; 5 = Moderate; 1 = Low).

The proposed visual quality ratings do not change significantly from the existing ratings for any of the alternatives. The minimal decrease in visual quality ratings can be attributed to the

encroachment of a new highway in an undeveloped area and/or the increase in visibility or dominance of the proposed highway. These ratings do not consider the probability of new development occurring outside of the right-of-way.

Visual quality outside of the highway right-of-way is largely determined by development restrictions/requirements and zoning imposed by local jurisdictions. Both Carbon and Yellowstone counties lack zoning or corridor management plans for the study area. For all alternatives under consideration, the effects of development outside of the right-of-way cannot be determined.

4.19.1.2 Visual Effects

The overall visual effects of the landscape would not be greatly affected by the proposed project. For most build alternatives, the adverse impact would be negligible. For the traveler, there would be a reduction in visual quality along all of the build alternatives in the valley. Table 4-15 summarizes the visual effects for each alternative.

TABLE 4-15
Comparison Summary of Visual Quality for Alternative Alignments and Assessment of Impacts

Visual Effect	Existing Alignment	Alternative 1	Alternative 2	Alternative 3A	Alternative 3B	Alternative 5A	Alternative 5B (Preferred)
Visual Effect on Landform	No Modification	Some Modification	Some Modification	Minimal Modification	Some Modification	Some Modification	Some Modification
Visual Effect on Land Cover	No Modification	Some Modification	Some Modification	Some Modification	Some Modification	Some Modification	Some Modification
Visual Effect on Development	No Modification	Minimal Modification	Some Modification	Some Modification	Some Modification	Some Modification	Some Modification
Overall Traveler Scenic Quality	Moderate-Low Quality	Moderate-High Quality	Moderate Quality	Moderate-Low Quality	Moderate-Low Quality	Moderate-High Quality	Moderate-High Quality
Visual Dominance of Highway(s)	Some Dominance	Some Dominance	Some to Very Dominant	Very Dominant	Very Dominant	Some Dominance	Some Dominance
Alter character of landscape	No Change	Most of the build alternatives	Less than Alt. 1	Slightly	Slightly	Slightly	Slightly

4.19.2 No Build Alternative

The rating assumes visual quality along the existing highway inside of the right-of-way for the No Build Alternative would remain the same as the existing conditions. Under this assumption, the No Build Alternative would not impact the overall average visual quality rating. If current development trends continue, it is likely that the visual quality of this corridor outside of the right-of-way would deteriorate.

4.19.2.1 Indirect Effects

Indirect effects on visual resources are not expected with the No Build Alternative.

4.19.2.2 Mitigation

No visual quality mitigation measures are proposed for the No Build Alternative.

4.19.3 Build Alternatives

The effects of development outside of the right-of-way cannot be determined.

4.19.3.1 Indirect Effects

Indirect effects of the proposed project might include a change in the type and distribution of existing and future residential and commercial developments along the corridor of the alternative selected.

4.19.3.2 Mitigation

The following visual quality mitigation measures are proposed for the build alternatives:

- If practical, techniques would be employed to lessen the visual effects of typical rock cuts and bridge abutments at stream crossings.
- As appropriate, natural-looking rock cuts with non-linear edges that have rounded edges resembling adjacent, existing bluffs would be created.
- As appropriate, revegetation practices such as reintroducing desirable plant species, creating pockets in newly graded slopes for plantings, and revegetating in ways that do not result in a linear edge would be implemented.

No other visual quality mitigation measures are proposed for the build alternatives.

4.19.3.3 Alternative 1—Far West Bench

The Alternative 1 alignment would alter and reduce the character of the existing landscape the most, affecting both views from the road and the view of the road. The roadway would be visible from locations on or near the Yellowstone River. The road would also be visible from a few existing farmsteads and homes along the route that are currently unaffected by the highway. The most visually sensitive location would be at the southern end of the alignment, where the road would transition from the bench to the valley with an elevation change of 54.9 m (180.0 ft). The roadway and associated landform modification would be visible from existing highways and several locations in the valley.

The positive impacts associated with the Alternative 1 alignment include the initial reduction of constructed encroachments, increased visibility of the surrounding mountain ranges, and

increased visibility of the Yellowstone River. These impacts are considered beneficial to the traveler's experience.

4.19.3.4 Alternative 2—Near West Bench

The Alternative 2 alignment would alter and reduce the character of the existing landscape. However, the impacts to the visual quality are anticipated to be slightly less than those for Alternative 1. The new roadway would be visible in the foreground and middle ground from existing residences and farmsteads. Alternative 2 would affect more visual resources associated with existing development, agricultural operations, ditches, and canals than Alternative 1. Alternative 2 would result in the greatest modification of landforms, water features, and vegetation. The increased exposure of existing development to the new highway would be greatest along the Alternative 2 alignment. The most visually sensitive location along this corridor would be where development exists and at the locations where the alignment makes grade transitions. Landform and land cover modifications on hillsides would be visible from the existing highways and several viewpoints in the valley.

The positive impacts associated with the Alternative 2 alignment include the initial reduction of constructed encroachments and increased visibility of the surrounding mountain ranges. These impacts are considered beneficial to the traveler's experience.

4.19.3.5 Alternative 3A—Near Existing Alignment

The Alternative 3A alignment would alter and only slightly reduce the character of the existing landscape. The impact to visual quality associated with views from the road was the lowest for the Alternative 3A alignment. The new roadway and the existing highway would be visible from existing residences and farmsteads on both sides of the railroad tracks. The traveler would be exposed to the encroachments associated with the existing highway, as well as new encroachments associated with the new alignment. The visibility of both roadways would dramatically increase the presence and visibility of highways in the valley.

4.19.3.6 Alternative 3B—Near Existing Alignment

The Alternative 3B alignment would alter and only slightly reduce the character of the existing landscape and would have the least impact to the overall visual quality. The new roadway and the existing highway would be visible from existing residences and farmsteads on both sides of the railroad tracks. The traveler would be exposed to the encroachments associated with the existing highway, as well as new encroachments associated with the new alignment. The Alternative 3B alignment leaves the existing highway south of Silesia and joins Alternative 3A north of Silesia, exposing the traveler to the encroachments associated with the existing highway.

4.19.3.7 Alternative 5A—Combined West Bench

The Alternative 5A alignment would alter and only slightly reduce the character of the existing landscape. Although very similar, Alternative 5A would likely affect more residences' views of the road than Alternative 5B (preferred). Landform modification would

be slightly greater in Alternative 5A than in Alternative 5B (preferred). Alternative 5A would result in less modification of landform at the south end than Alternative 1. Because this alignment follows the existing alignment prior to diverging to the west, the traveler would be exposed to the encroachments associated with the existing corridor. The visibility of both roadways would dramatically increase the presence and visibility of highways in the valley.

The increased visibility of the Yellowstone River and the mountain ranges along the north end of the corridor of the Alternative 5A alignment would also positively impact the traveler's experience.

4.19.3.8 Alternative 5B—Combined West Bench (Preferred)

The Alternative 5B (preferred) alignment would alter and only slightly reduce the character of the existing landscape in a manner similar to Alternative 5A. The visual quality assessment showed moderate changes to the visual quality ratings for the Alternative 5B (preferred) alignment. Fewer residences' views of the road would be affected by Alternative 5B (preferred) than by Alternative 5A. Landform modification would be slightly less for Alternative 5B (preferred) than for either Alternative 5A or Alternative 1. Because this alignment follows the existing alignment prior to diverging to the west, the traveler would be exposed to the encroachments associated with the existing corridor. The visibility of both roadways would dramatically increase the presence and visibility of highways in the valley.

The increased visibility of the Yellowstone River and the mountain ranges along the north end of the corridor of the Alternative 5B alignment would positively impact the traveler's experience.

4.20 Energy Consumption

The extent of horizontal curves in the road, the angle of the curves, and distances were some of the factors considered when determining the energy impacts or conservation potential of each build alternative. Measures that improve traffic flow decrease fuel consumption for the average vehicle. Table 4-16 summarizes the factors used to compare energy consumption impacts for each build alternative to the No Build Alternative.

TABLE 4-16
Factors Influencing Operations Energy Consumption by Alternative

Factor	No Build Alt.	Alt. 1	Alt. 2	Alt. 3A	Alt. 3B	Alt. 5A	Alt. 5B (Preferred)
Travel Distance	16.4 km (10.2 mi)	19.2 km (11.9 mi)	17.7 km (11.0 mi)	17.6 km (10.9 mi)	16.9 km (10.5 mi)	18.2 km (11.3 mi)	18.4 km (11.4 mi)
Topography	Flat	Moderate/ Rolling	Moderate/ Rolling	Flat	Flat	Moderate/ Rolling	Moderate/ Rolling

4.20.1 No Build Alternative

As long as the Rockvale to Laurel stretch of US 212 remains in service, total energy used by vehicles would increase as ADT increases. In 2000, MDT estimated that annual average daily traffic (AADT) on US 212 at Rockvale was 5,160 vpd, and that it would increase to 11,590 vpd in 2025. Between 2003 and 2025, MDT has estimated that AADT will increase at an annual traffic growth rate of 2.75 percent. Such an increase in traffic volume would likely lead to increased traffic congestion, especially in the summer months when tourists use US 212 to travel from Billings to the northeast entrance of Yellowstone National Park. Congestion would reduce travel speeds and slow the flow of traffic, resulting in reduced fuel efficiency along the Rockvale to Laurel portion of US 212. In other words, direct energy consumption associated with the existing highway would increase.

4.20.1.1 Indirect Effects

Energy would continue to be used to maintain the existing highway.

4.20.1.2 Mitigation

No energy consumption mitigation measures are proposed for the No Build Alternative.

4.20.2 Build Alternatives

Compared to the No Build Alternative, the build alternatives would help vehicles be more fuel-efficient. The increased fuel efficiency would result from reducing congestion, which allows vehicles to maintain more constant speeds. The reduced congestion would be related to such things as:

- Effectively separating through traffic (traffic with destinations north or south of Laurel or Rockvale, respectively) from local traffic on US 212 because the existing US 212 section would become a local access road to serve residential areas, school buses, and general local needs.
- Having two lanes (especially effective during the summer months, when there are more tourists).

Highway overpasses may limit drivers' lines of sight, potentially leading to reductions in vehicle speed, and each build alternative would include overpasses. However, overall, vehicle speeds with the build alternatives would be more constant than with the No Build Alternative.

4.20.2.1 Indirect Effects

The impacts related to energy expended in the construction of the roadway are addressed in *Section 4.22.20, Energy Consumption*. Energy consumption for maintenance of the roadway

would be greater than with the No Build Alternative because both the new US 212 and the PTW would be maintained.

4.20.2.2 Mitigation

No energy consumption mitigation measures are proposed for the build alternatives.

4.20.2.3 Alternative 1—Far West Bench

Impacts for Alternative 1 would be the same as the general impacts for the build alternatives described above.

4.20.2.4 Alternative 2—Near West Bench

Compared to Alternative 1, vehicle speeds on Alternative 2 would be more stable because there would be less deceleration and subsequent acceleration due to fewer grade changes and fewer sharp curves. In addition, it would have a shorter traveling distance and improved line of sight. Therefore, Alternative 2 would provide greater energy efficiency related to operating motor vehicles on US 212 than Alternative 1.

4.20.2.5 Alternative 3A—Near Existing Alignment

It is likely that Alternative 3A would be one of the more fuel-efficient alternatives. Alternative 3A would have one of the shortest alignments of the build alternatives. It would be situated low in the valley, resulting in fewer vertical grade changes, less distance to travel, and fewer curves than the other build alternatives. These factors would reduce vehicle fuel consumption and result in an overall increase in energy efficiency. The railroad crossing for Alternative 3A would be in a different location than the railroad crossing for Alternatives 1, 2, 5A, and 5B (preferred).

4.20.2.6 Alternative 3B—Near Existing Alignment

Alternative 3B would have the shortest alignment of the build alternatives. Because of the similarities between Alternatives 3A and 3B, the impacts would be similar. However, it is likely that Alternative 3B would be more fuel-efficient than Alternative 3A because of its shorter length and more direct, flatter route.

4.20.2.7 Alternative 5A—Combined West Bench

Since it is essentially a hybrid of the alignments for Alternatives 1 and 2, the energy efficiencies for Alternative 5A would be similar. However, Alternative 5A would be more similar to Alternative 2 than to Alternative 1. Vehicle speeds on Alternative 5A would be more stable because there would be less deceleration and subsequent acceleration due to fewer grade changes and fewer sharp curves. In addition, it would have a slightly shorter traveling distance and improved line-of-sight. These attributes would increase energy efficiency.

4.20.2.8 Alternative 5B—Combined West Bench (Preferred)

Alternative 5B (preferred) would be slightly less energy efficient than Alternative 5A because of its slightly longer alignment. Other than that, the energy efficiencies related to Alternative 5B would be almost identical to those for Alternative 5A.

4.21 Geology and Soils

4.21.1 No Build Alternative

The No Build Alternative would not cause additional impacts to the geology and soils within the project area.

4.21.1.1 Indirect Effects

Indirect effects on geology and soils are not expected with the No Build Alternative.

4.21.1.2 Mitigation

No geology and soils mitigation measures are proposed for the No Build Alternative.

4.21.2 Build Alternatives

Geology and soil impacts would be specific to each build alternative. Cut and fill sections would be designed to:

- Minimize soil disturbance and the volumes of required fill
- Reduce the probability of slope failures

Subsurface data collected at each proposed cut slope location would be used to identify the material types underlying each cut slope to further revise recommended cut slope angles.

General impacts associated with cut slopes might include erosion of materials exposed in the cut slopes, possible slope failures, in stability hazards due to bentonite beds, and perched water at the gravel/shale contact, which might seep from exposed cut faces and degrade water quality. Erosion from the cut slopes could affect water quality in surface waters.

Embankment fills might be subject to erosion until properly stabilized.

Cut-and-fill activities would impact soil by using soil material for fill and removing soil through cuts. Use of soil for fill and removal for cuts precludes the use of this soil for other services such as crop production or native vegetation support.

4.21.2.1 Indirect Effects

Indirect effects of the proposed project on geology and soils would vary in scale depending on the alternative selected. Changes to soil in specific areas might affect soil-dependent species (vegetative and wildlife) and the productivity of agricultural lands.

4.21.2.2 Mitigation

No geology and soils mitigation measures are proposed for the build alternatives other than those discussed in *Section 4.10.2.2, Mitigation,* of the *Water Flow and Quality* section.

4.21.2.3 Alternative 1—Far West Bench

Alternative 1 includes several cuts in shale and sandstone bedrock and fills in intermittent drainages, which would result in minor topographic changes within the project area.

Alternatives 1 and 2 require the largest number of cut slope excavations. Cuts would be concentrated mainly in the southern third of the Alternative 1 alignment and could be approximately 14 m (45.9 ft) in depth. General impacts associated with cut slopes as discussed in *Section 4.21.2*, *Build Alternatives,* apply to Alternative 1. Soil removal for cuts is anticipated to moderately impact the use of soils for crop production or native vegetation support.

Fill areas would be required throughout the southern third of the Alternative 1 alignment as well as within the northern section where embankment fills would be necessary for eroded gullies. Alternative 1 would require one of the largest amounts of fill, second only to Alternative 5B (preferred). Fill heights would range up to approximately 19.0 m (62.3 ft) in height. Embankment fills might be subject to erosion until properly stabilized and preclude the use of fill soil for other services such as crop production or native vegetation support.

4.21.2.4 Alternative 2—Near West Bench

Alternative 2 includes cuts in shale and sandstone bedrock, and high fills in transverse drainages. Alternative 2 would require less earthwork than Alternative 1 but would have similar impacts. General impacts associated with cut slopes as discussed in *Section 4.21.2, Build Alternatives*, apply to Alternative 2. Alternative 2 would require a moderate volume of fill relative to the other alternatives. Soil removal and addition for cut and fill activities is anticipated to slightly impact the use of soils for crop production or native vegetation support relative to the other alternatives.

Alternative 2 climbs onto a bench in the southernmost section of the Alternative 2 alignment and requires cuts approximately 7.0-m (23.0-ft) deep and fills approximately 8.0-m (26.2-ft) high. The cuts would likely be excavated into gravels and bedrock. Cut slopes in saturated areas might act as drains or might have seeps and springs emanating from their faces. Additional cuts would be required in the vicinity of the Farewell Road crossing, including cuts approximately 10.0-m (32.8-ft) deep and fills approximately 22.0-m (72.2-ft) high. A

10.0-m (32.8-ft)-high embankment is proposed where the alignment descends from the bench and meets the existing alignment.

4.21.2.5 Alternative 3A—Near Existing Alignment

Alternative 3A closely parallels the existing highway alignment. Cuts and fills would be minimal and Alternative 3A would have the least impact based on cut and fill requirements. Project impacts to soils and geology differ from Alternatives 1 and 2 because the majority of cut and fill activities would be conducted within saturated soils instead of sloped landforms and benches. Given the greater area of farmland impacted by the Alternative 3A alignment, construction activities would likely result in a larger decrease in soil productivity due to loss of project soils for crop production or native vegetation support.

Within the southern third of the Alternative 3A alignment, road construction would require excavation into saturated soils near leaky canals and construction of embankments on saturated ground near leaky canals. Excavations could threaten the stability of the canals, especially if the excavations encounter zones that are saturated by canal leakage. A large embankment approximately 9.0-m (29.5-ft) high and a bridge are proposed in a portion of the alignment. Construction within saturated soils is also anticipated along the existing alignment (where irrigation water ponds) as well as near the railroad crossing and existing underpass (where shallow groundwater collects).

4.21.2.6 Alternative 3B—Near Existing Alignment

Impacts associated with Alternative 3B would be very similar to those described for Alternative 3A, but would require significantly fewer cut activities. Although a minimal amount of cut and fill activity would be associated with Alternative 3B, this alignment would require slightly more fill volume than Alternative 3A. Again, this is attributed to the larger amount of cut activities associated with Alternative 3A. Alternative 3B is anticipated to slightly impact the use of soils for crop production or native vegetation support relative to the other alternatives.

4.21.2.7 Alternative 5A—Combined West Bench

Impacts to project soils and geology associated with Alternative 5A are likely to be similar in nature to Alternative 1. There would be areas of cut and fill throughout the southern portion of the alignment. In addition to general impacts associated with cut slopes as discussed in *Section 4.21.2, Build Alternatives*, project impacts within this area might cause erosion of materials exposed in the cut slopes, possible slope failures, instability hazards due to bentonite beds, and perched water at the gravel/shale contact, which might seep from exposed cut faces and degrade water quality. In particular, the area immediately northwest of Rockvale appears to be prone to high soil erosion; numerous erosional channels from seasonal runoff and barren slopes were observed. Alternative 5A impacts the largest amount of farmland and is anticipated to have larger impacts associated with reduced soil productivity relative to the other alternatives.

4.21.2.8 Alternative 5B—Combined West Bench (Preferred)

Impacts associated with Alternative 5B (preferred) would be similar to those described for Alternative 5A but might be a little greater due to a slightly longer alignment.

4.22 Construction Impacts Related to the Proposed Project

This section provides information about the following kinds of impacts related to constructing the build alternatives:

- Land Use
- Farmlands
- Social Conditions
- Transportation Right-of-Way and Relocations
- Economic Conditions
- Environmental Justice
- Pedestrian and Bicycle Considerations
- Air Quality
- Noise
- Water Flow and Quality
- Wetlands
- Water Bodies and Aquatic Resources
- Vegetation
- Wildlife Resources
- Threatened and Endangered Species and State Species of Concern
- Floodplains
- Cultural Resources
- Hazardous Materials
- Visual Resources
- Energy Consumption
- Geology and Soils
- Construction Schedule and Method

4.22.1 Land Use

Road closures or restrictions during construction phases of the build alternatives might temporarily inhibit development and growth within the project area.

Mitigation

MDT would keep the county commissioners informed about the project by providing updates to the commissioners at their request and by attending county commissioner meetings, if

appropriate, to address community and business concerns. This would satisfy the Carbon County Growth Policy (refer to *Section 3.1.4.1, Carbon County Montana Growth Policy*), which specifically requests that the County Commissioners be engaged in the development process. No other specific land use mitigation measures are proposed for the construction phases of the proposed project.

4.22.2 Farmlands

The displacement of farmlands during construction phases of the build alternatives would be the same as that discussed in *Section 4.2.2, Build Alternatives.*

Mitigation

No farmland mitigation measures are proposed for the construction phases of the proposed project.

4.22.3 Social Conditions

Roads might be closed or travel restrictions might apply on some roads during construction. Temporary impacts would include traffic safety, emergency response issues, and delays to the traveling public.

Traffic and emergency response vehicles would experience the fewest delays with Alternatives 1 and 2 because, except where the new road leaves and re-enters the PTW, activities would be west of the existing alignment. Delays to traffic and emergency response teams with Alternatives 3A and 3B would be greater than with Alternatives 1 and 2 because much of the existing roadway would be reconstructed. This would create rough road conditions and require lane restrictions. It is anticipated that Alternatives 5A and 5B (preferred) would have more construction-related traffic congestion than with Alternatives 1 and 2, but less than with Alternatives 3A and 3B. Although much of Alternative 5A would be west of the existing alignment, the southern portion would remain on the PTW longer than Alternatives 1, 3A, and 5B (preferred). A section of the existing alignment would be used for the four-lane expansion and would cause traffic congestion, with lane restrictions similar to those for Alternatives 3A and 3B.

Mitigation

Social condition mitigation measures for the construction phases of the proposed project will include, if necessary:

- Having MDT keep the county commissioners informed about the project by providing updates to the commissioners at their request and by attending county commissioner meetings, if appropriate, to address community and business concerns. The county commissioners could then be responsive to their constituents and could help with problem solving.

- Requiring a traffic control plan with a response strategy for emergency vehicles needing to travel through the construction area.
  - The response strategy will include, if necessary, 911-dispatch communication with traffic control personnel.
  - The traffic control plan would have an option or alternate route for emergency responders to move along US 212 in an efficient and safe manner.
  - This emergency response strategy might need to be revised at different construction stages.
  - The strategy would need to be coordinated/communicated with emergency responders.
- For Alternatives 1 and 3A, providing flaggers and signs to reduce congestion at the locations where the new road leaves and reenters the existing alignment.
- For Alternatives 3A and 3B, using a pilot car during lane restrictions (if necessary) to maintain public safety.
- For Alternatives 5A and 5B (preferred), addressing traffic safety and minimizing traffic delays in the section of construction where the four-lane expansion would use the existing alignment and where traffic-turning activities would occur during construction at the US 310 interchange.

4.22.4 Transportation Right-of-Way and Relocations

During the various phases of construction, access to business, residence, and agricultural lands might be temporarily disrupted.

Mitigation

Transportation right-of-way and relocation mitigation measures to reduce impacts to businesses, residents, and farmers for the construction phases of the proposed project will include, if necessary:

- Making arrangements prior to the start of each phase of construction to maintain access
- Designating alternative access points for impacted businesses, residences, and farmlands.

4.22.5 Economic Conditions

The budget for constructing the proposed project would be too small in size to cause direct measurable impacts on per capita income, employment rates, or various business sectors in the region. However, it should be recognized that construction of the proposed project would most likely employ skilled and unskilled construction laborers and use subcontractors located within the area, which would result in a temporary economic benefit for the region.

Temporary construction-related inconveniences might cause “through traffic” travelers to stop at other, more convenient stores, restaurants, and gas locations outside the immediate construction zone. However, at the same time, many business establishments near and within the construction zone would experience new patronage from project workers.

It is expected that three restaurants and one convenience store within the project area that provide “daily-necessity” items would experience an overall increase in sales during construction of the proposed project. There might be additional minor positive impacts to local businesses associated with Alternative 1 because construction activities would occur west of the existing alignment. This would allow PTW “through” traffic and local traffic to continue accessing present roadside businesses.

Mitigation

Economic condition mitigation measures to reduce impacts to roadside business establishments during the construction phases of the proposed project will include, if necessary, creating a traffic control plan to:

- Maintain traffic safety
- Provide opportunities for vehicle patrons to leave and reenter the roadway from roadside business establishments

4.22.6 Environmental Justice

During construction phases of the build alternatives, there would be no disproportionate adverse environmental impacts to low-income or minority populations.

Mitigation

No environmental justice mitigation measures are proposed for the construction phases of the proposed project.

4.22.7 Pedestrian and Bicycle Considerations

During the various phases of construction, access to pedestrian and bicycle facilities might be temporarily disrupted.

Mitigation

Pedestrian and bicycle mitigation measures for the construction phases of the proposed project will include, if necessary, making arrangements prior to the start of each phase of construction to maintain access or to designate alternative access points for pedestrian and bicycle facilities.

4.22.8 Air Quality

Air quality issues related to construction activities would include gaseous combustion emissions (including sulfur dioxide) and particulate emissions, generally referred to as fugitive dust. Air emissions come from three general categories of sources: point, area, and mobile.

- **Point Sources.** Point sources generally represent fixed pieces of equipment that emit particulates and other criteria pollutants (nitrogen oxides, carbon monoxide, and sulfur dioxide) through stacks. Examples are asphalt plants and concrete batch plants.
- **Area Sources.** Area or fugitive sources of particulates include wind-blown dust from material storage piles, handling construction materials, exposed soils, haul roads, and other sources. The quantity of emissions varies based on silt content, moisture content, and physical handling of the materials.
- **Mobile Sources.** Mobile sources of particulate and other criteria pollutants include automobiles, heavy equipment, and diesel portable generators and compressors.
- **Sulfur Dioxide.** A sulfur dioxide non-attainment area was identified near Laurel. Construction might introduce new emission sources, such as asphalt and concrete-batch plants, diesel engines, and other sources. These emission sources might increase sulfur dioxide in the air, further degrading the air quality within the non-attainment area.
- **Particulate Matter.** Haul trucks, concrete trucks, delivery trucks, and other earth-moving vehicles might generate construction-related particulate emissions when traveling over paved and unpaved roads or surfaces. Material might also be blown from stationary sources such as stockpiles and unprotected soils, as well as from haul loads. The quantity of emissions would vary based on silt content, moisture content, and physical handling of these materials.

Mitigation

In accordance with MDT Standard Specifications, contractors are required to operate in compliance with applicable federal, state, and local air quality standards.

4.22.9 Noise

Construction activities would generate noise that could temporarily cause impacts to receptors near the construction zone. Construction-related sources of noise might include diesel-powered earth-moving equipment (such as dump trucks and bulldozers), vehicle back-up alarms, compressors, and other sources. Detoured traffic and vehicles transporting construction equipment and materials might also contribute to construction-related noise impacts.

Mitigation

In accordance with MDT Standard Specifications, contractors are required to adhere to applicable noise laws, which may include local ordinances.

4.22.10 Water Flow and Quality

Construction would cause temporary soil disturbances with the potential for siltation into the drainages at bridge and/or culvert replacement sites.

Mitigation

In accordance with MDT Standard Specifications, contractors are required to obtain and adhere to applicable permits and authorizations. Applicable permits and authorizations may include obtaining a 318 Authorization for short-term water quality standards for turbidity related to construction activity, preparing and maintaining an erosion control and sediment control plan for a Montana Pollutant Discharge Elimination System (MPDES) permit, obtaining a CWA Section 404 permit for dredge and fill in waters of the U.S., and obtaining a Stream Protection Act Notification (SPA 124). Contractors will be expected to re-establish permanent vegetation in disturbed areas within MDT right-of-way or easements. Areas will be seeded and/or planted with desirable plant species, as recommended by the MDT Botanist and in accordance with MDT Standard Specifications. Contractors will be expected to adhere to MDT's Erosion and Sediment Control Best Management Practices Manuals through use of BMPs such as fiber mats, catch basins, silt fences, and sediment barriers.

4.22.11 Wetlands

The majority of the direct impacts on jurisdictional and non-jurisdictional wetland and riparian communities would be caused by the placement of fill materials required for highway construction. Refer to *Section 4.11.2.4, Wetland, Riparian, and Aquatic Areas Affected* for information about the environmental consequences to wetlands from constructing the proposed project. As mentioned in *Section 4.22.10, Water Quality*, work below the normal high-water mark would require a CWA Section 404 permit for dredge and fill in Waters of the U.S. from the COE.

Mitigation

During the construction phases of the proposed project, the mitigation measures described in *Section 4.22.10, Water Quality*, and the applicable mitigation measures outlined in *Section 4.11.2.6, Mitigation*, of the Wetlands section would be followed.

4.22.12 Water Bodies and Aquatic Resources

Soil disturbance, erosion, and runoff during bridge and culvert construction activities might increase sediment delivery to water bodies. Increased sediment delivery could degrade

aquatic resources through the sedimentation of habitat and increased levels of turbidity and suspended sediment in the water column. These effects could:

- Reduce or eliminate local stream bottom habitat used by aquatic insects.
- Reduce local aquatic insect abundance and diversity.
- Reduce the permeability among interstitial spaces within spawning gravels, which would inhibit the flow of well-oxygenated water and the removal of metabolic wastes. This would subsequently reduce spawning success, hatching success, and fish production.
- Reduce the interchange of surface and subsurface waters in the zone immediately beneath the stream channel (Nelson et al., 1991).

These effects could potentially occur in Rock Creek or in the Clarks Fork Yellowstone River via Rock Creek and/or Farewell Creek.

Accidental spills, leakage, and runoff or leaching of petroleum products and other potentially toxic substances used during construction can potentially contaminate surface water drainages and have acute and chronic effects on fish and their foods. The effects of such contamination are influenced by:

- The toxicity of the contaminant, including its persistence and fate
- The volume of the spill
- The distance from surface water and the likelihood of contaminant entry
- The volume and diluting ability of the receiving water
- The sensitivity of organisms exposed to the contaminant.

Direct effects might include mortality of aquatic organisms, while indirect effects might be exhibited through chemically induced changes in densities and community structures of aquatic organisms (Norris et al., 1991). Effects would be comparatively greater during low-flow periods rather than high-flow periods, and in smaller rather than larger water bodies. These effects could potentially occur in Rock Creek or in the Clarks Fork Yellowstone River via Rock Creek and/or Farewell Creek.

Mitigation

In accordance with MDT Standard Specifications, contractors are required to obtain and adhere to applicable permits and authorizations. Applicable permits and authorizations may include obtaining a 318 Authorization for short-term water quality standards for turbidity related to construction activity, preparing and maintaining an erosion control and sediment control plan for a Montana Pollutant Discharge Elimination System (MPDES) permit, obtaining a CWA Section 404 permit for dredge and fill in waters of the U.S., and obtaining a Stream Protection Act Notification (SPA 124). Contractors will be expected to re-establish permanent vegetation in disturbed areas within MDT right-of-way or easements. Areas will be seeded and/or planted with desirable plant species, as recommended by the MDT Botanist and in accordance with MDT Standard Specifications. Contractors will be expected to adhere to MDT’s Erosion and Sediment Control Best Management Practices Manuals through use of BMPs such as fiber mats, catch basins, silt fences, and sediment barriers.

4.22.12.1 Alternative 1—Far West Bench

Bridge construction and related activities might impact aquatic resources at the new US 310 Rock Creek bridge crossing. Possible direct and indirect effects on fish, aquatic invertebrates, and their habitats include the following:

- Loss of aquatic and riparian habitat at and immediately adjacent to the creek crossing
- Habitat degradation and loss from increased bank disturbance and erosion, sediment delivery, and sedimentation
- Altered spawning and seasonal migrations of fish from instream obstructions
- Direct loss of fish and aquatic invertebrates from accidental spills, leakage, and runoff of toxic substances into the creek

Construction of a new bridge over Rock Creek may result in the localized loss of aquatic and riparian habitat. Instream construction activities may also temporarily alter Rock Creek habitat characteristics (such as water depth, velocity, and habitat types) that are important to native and introduced fish species as well as to aquatic invertebrates. In addition, Alternative 1 would cross the Free Silver Ditch, Mason Canal, and White Horse Canal. It is not expected that the operation of the canals would be affected.

See *Section 4.12.2.6, Alternative 1—Far West Bench* of the *Water Bodies and Aquatic Resources* section for additional information related to the loss of riparian habitat adjacent to the new bridge.

Game fish species present in the vicinity of the US 310 crossing that could potentially be affected by construction activities are brown trout (*Salmo trutta)*, mountain whitefish (*Prosopium williamsoni)*, and brook trout (*Salvelinus fontinalus)* (all of which are fall spawners), and rainbow trout (*Oncorhynchus mykiss)*, which spawn during spring. Fall-spawning fish species might potentially be at greater risk due to the very low flows and apparent limiting habitat conditions already occurring in this reach of Rock Creek in the fall.

The introduction of additional potentially limiting factors, such as increased sediment delivery and turbidity, sedimentation of potential spawning gravels, and filling of pools that provide cover for fish, could cause localized decreases in habitat suitability, survival rates of fish and insects, and fish densities. Aquatic insects present among gravels and cobbles at the bridge crossing and downstream also could be affected by construction activities. These effects would probably be temporary and subside once construction was completed. High spring flows would likely transport sediment downstream into the Clarks Fork Yellowstone River, re-establishing pool depths and flushing sediments that may have accumulated in Rock Creek gravels. Implementation of mitigation measures would minimize, avoid, or prevent the potential occurrence of the impacts described.

4.22.12.2 Alternatives 2, 3A, 3B, 5A, and 5B (Preferred)

Impacts to aquatic resources and water bodies would include potential introduction of sediment or contaminants into Farewell Creek during construction, as described earlier.

Farewell Creek is an intermittent stream draining to the Clarks Fork Yellowstone River. Implementation of mitigation measures would minimize, avoid, or prevent the potential occurrence of these impacts. For example, design and construction of standard stormwater management BMPs would prevent contaminants from entering water bodies and avoid operational impacts.

4.22.13 Vegetation

Because of the direct relationship between wildlife habitat and vegetation, construction-related impacts to vegetation are addressed in *Section 4.22.14, Wildlife Resources*.

4.22.14 Wildlife Resources

Various contractor actions could have adverse impacts on wildlife habitat located on private lands, including:

- Storing or stockpiling equipment or materials
- Developing and operating borrow sites
- Developing construction staging and maintenance areas
- Establishing field offices
- Storing, handling, or transferring hazardous materials or fuel
- Building and using temporary access roads

Therefore, it is likely that some losses of upland, wetland, and riparian habitat in addition to those described below would occur with each of the build alternatives. The type and extent of these impacts cannot be determined exactly because the locations of the contractor activities on private lands are not known.

Construction activity could temporarily affect migration corridors if migrating animals take alternative routes to avoid the construction sites.

Direct impacts on wildlife could include mortality during construction. For example, during bridge construction, deer might move from crossing the road under the bridge to crossing directly over the road. This altered behavior could increase the risk that deer would be hit by vehicles. This is a particular concern if construction began early in the morning and extended into the evening hours.

Mitigation

During the construction phases of the proposed project, in addition to the mitigation measures discussed in *Section 4.14.2.6, Mitigation,* of the Wildlife Resources section, proposed wildlife resource and habitat mitigation measures would include the following:

- Conducting searches for nests in accordance with MBT conventions required by the FWS.

- Timing construction or distractive measures to avoid disturbance of nests in order to comply with the Migratory Bird Treaty Act.
- Not damaging or destroying vegetation that is not designated for removal.
- Electrical facilities that are relocated within MDT right-of-way as a result of this project would be raptor-proofed in accordance with MDT policy. MDT requires the utility company to submit a copy of the raptor-safe structure design that would be used for these relocated facilities.

4.22.15 Threatened and Endangered Species and State Species of Concern

Based on application of the conservation measures listed in the *Mitigation* section and on existing levels of current human activity in the proposed project areas for Alternatives 1, 2, 3A, 5A, and 5B, construction of the proposed project would have “no effect” on wintering or nesting bald eagles. With Alternative 3B, construction would occur at a distance of about 1.20 km (0.75 mi) from the bald eagle nest near Silesia, where a few wintering birds also congregate. As long as typical construction-related timing restrictions and project-specific provisions required by regulatory agencies were followed (see the *Mitigation* section below), neither direct nor indirect impacts on this nesting pair are expected to occur.

Mitigation

Specific bald eagle mitigation measures for the construction phases of the proposed project would include the following:

- Prior to construction, MDT would contact and coordinate with FWS and MFWP to reconfirm the locations of known nests, roosts, or concentration areas occurring within 1.6 km (1 mi) of the project.
- MDT would discuss and coordinate construction restrictions with FWS and MFWP, as appropriate to the location, setting, and status of known or discovered nests, roosts, or concentration areas. These construction restrictions would apply to activities during the construction period. Although they would be site specific, typical construction restrictions will include, if necessary, the following:
  - Not conducting high intensity activities (gravel crushing, pavement milling, heavy equipment operations, and so forth) or locating or placing staging areas, stockpile sites, borrow sites, or production processing or mixing plants within 0.8 km (0.5 mi) of an active nest between March 1 and May 15.
  - Not conducting high-intensity activities (gravel crushing, pavement milling, heavy equipment operations, and so forth) or locating or placing borrow sites, or production processing or mixing plants within 0.4 km (0.25 mi) of an active nest between May 15 and July 15.

– Applying temporal and spatial restrictions within 0.4 km (0.25 mi) of roost sites and concentration areas during the seasons that these were being actively used. Restrictions to work might be extended or modified in coordination with, and subject to approval by, FWS and MFWP.

4.22.16 Floodplains

Construction-related impacts to the Yellowstone River, Clarks Fork Yellowstone River, and Rock Creek 100-year floodplains might include temporary encroachment of construction vehicles and materials and the placement of fill. These impacts might reduce the capacity for floodwater storage.

Mitigation

The Montana Department of Natural Resources and Conservation or the local floodplain administrator regulates construction activities in a 100-year floodplain.

- If impacts to floodplains were unavoidable, a joint floodplain development permit application would be submitted to the Montana Department of Natural Resources and Conservation. That permit would have to be approved before construction activities began.
- The COE, FEMA, and floodplain agencies for Montana State, Carbon County, and Yellowstone County would be consulted prior to construction.

Since construction activities are not expected to increase water surface elevation from the base flood elevation greater than 0.15 m (0.50 ft), no other floodplain mitigation measures are proposed.

4.22.17 Cultural Resources

During construction, temporary effects from unsightly disturbed areas, construction vehicles, or material storage areas (visual resource); noise; and fugitive dust might affect the historic sites in the project area determined eligible for the NRHP. In addition, construction easements, detours, or road closures might affect access to these sites.

During ground-disturbing activities associated with road building, previously unidentified archaeological resources could be discovered.

Mitigation

If archeological resources are discovered during the construction phases of the proposed project, construction would cease immediately. To identify, evaluate the significance of, and determine appropriate future actions related to the archeological/historical resource(s), the MDT archeologist and/or historian would be consulted and would work with the Montana State Historic Preservation Office, as appropriate.

4.22.18 Hazardous Materials

Hazardous material impacts related to construction activities such as excavation and demolition would be specific to each build alternative. These impacts might include:

- Materials in the waste dumps that require special handling and disposal
- Buildings to be demolished that contain asbestos-containing-material or lead-based-paint wastes
- Home heating oil USTs and associated fuel lines or ASTs at residential displacements
- Contaminated soil (for example, creosote-stained soil in the railroad tie salvage business)
- Polychlorinated biphenyls (PCBs) in utility transformers
- PCBs in the electrical substation in Silesia

Table 4-17 summarizes some of the sites that potentially contain hazardous materials.

TABLE 4-17
Sites Potentially Containing Hazardous Materials

	Alt. 1	Alt. 2	Alt. 3A	Alt. 3B	Alt. 5A	Alt. 5B (Preferred)
Waste dumps	7	4	0	0	7	7
Buildings with potential asbestos-containing-material or potential lead-based-paint wastes	2	1	---	---	1	1
Storage tanks with heating fuels	---	---	Numerous	Numerous	---	---
Railroad tie salvage business (creosote-stained soil)	---	---	1	1	---	---
Electric pole transformers (PCBs)	3	---	---	---	2	2
Electrical substation (PCBs)	---	---	1	1	---	---
Other	---	1	---	---	1	---

In addition, various potentially hazardous materials are related to construction vehicles and equipment. If not dealt with in an appropriate, efficient manner, hydraulic or other hazardous material leaks from construction vehicles might adversely impact sensitive resources such as wetlands, water bodies, and wildlife resources. There is also a potential for leaks and spills with onsite storage of hazardous materials related to construction activities.

Mitigation

During the construction phases of the proposed project, hazardous material mitigation measures would include:

- Handling and disposing of materials contained in the waste collection areas identified within the footprints in special ways such as the following:
  - The waste collection area would be evaluated to determine if special handling would be required.
  - Materials in the waste collection area would be deposited in landfills approved for those materials. Note: the waste collection areas would not be so extensive that re-routing of the alignment would be required.
- Determining if buildings to be demolished are contaminated with asbestos or other hazardous materials, and, if so, properly disposing of the materials.
  - Asbestos and Hazardous Materials inspections would be conducted for all building structures demolished or relocated from the project corridor. The inspections would identify the location and quantity of asbestos-containing-material, home heating oil systems, of other hazardous material, if any, which would be abated prior to demolition.
  - A remediation/reclamation plan would be developed, if needed, in consultation with MDEQ and the counties.
  - Regulated asbestos-containing materials containing more than 1 percent asbestos would be removed and properly disposed in approved locations prior to building demolition.
  - Structures slated for relocation would be inspected for asbestos-containing material by a state-licensed inspector and abated prior to relocation, if necessary.
  - The demolition contractor would be required to file a National Emissions Standards for Hazardous Air Pollutants Demolition/Renovation Notification form with MDEQ for relocated or demolished structures.
- Identifying and properly disposing of home heating oil storage tanks (underground and aboveground) and associated fuel lines that might exist at residences that would be displaced.
  - Site inspections would determine if any storage tanks exist on the property.
  - Removal and disposal of storage tanks and associated contaminated soil would be completed in accordance with applicable state and federal laws and regulations.
- Identifying and properly disposing of contaminated soil.
  - PSIs would determine the level of soil contamination.

  - Disposal of contaminated soil, if needed, would be conducted in accordance with applicable state and federal laws and regulations.

- Identifying and properly disposing of PCBs.
  - PSIs would be performed to determine if PCBs were present in electrical transformers or in soils around electric utility facilities that would be impacted by the project. If PCBs were discovered, a remediation/disposal plan would be developed in consultation with MDEQ.

- Storing construction-related hazardous materials on site in accordance with applicable guidelines (such as secondary containment, adequate labeling, and so forth).

4.22.18.1 Alternative 1—Far West Bench

Alternative 1 would likely encounter seven waste collection sites and three electric transformers on poles. Residences on two of the parcels that would be impacted might contain asbestos-containing materials or lead-based paints.

4.22.18.2 Alternative 2—Near West Bench

Alternative 2 would likely encounter four waste collection sites and an old foundation containing scrap material. One home that could be displaced that might contain asbestos-containing materials or lead-based paints.

4.22.18.3 Alternative 3A—Near Existing Alignment

Alternative 3A would likely encounter soils at Klamert Railroad Salvage where stored railroad ties show signs of leaching creosote into the soil. The electrical substation owned by Yellowstone Valley Electric Co-Op in Silesia, which is located within Alternative 3A, might contain components with PCBs. Numerous ASTs and USTs are also located in the Alternative 3A alignment.

4.22.18.4 Alternative 3B—Near Existing Alignment

Hazardous material impacts for Alternative 3B would be the same as those described in Alternative 3A.

4.22.18.5 Alternative 5A—Combined West Bench

Alternative 5A would likely encounter seven waste collection sites, two utility pole transformers, and an area of silos and farm equipment storage. One home that could be displaced that might contain asbestos-containing materials or lead-based paints.

4.22.18.6 Alternative 5B—Combined West Bench (Preferred)

Hazardous material impacts for Alternative 5B (preferred) would be the same as those described for Alternative 5A.

4.22.19 Visual Resources

Temporary construction-related impacts to visual resources would be common until the construction was complete and the disturbed areas were restored. These impacts might include unsightly disturbed areas (such as cut and fill of slopes), construction vehicles, or material storage areas.

Mitigation

No visual resource mitigation measures are proposed for the construction phases of the proposed project.

4.22.20 Energy Consumption

The proposed new roadway facilities would be composed of construction materials that would require energy for fabrication. Energy would also be used to transport and place construction materials. The commitment of energy for construction activities would be primarily in the form of gasoline and diesel fuel. The amount of fuel that would be required is not expected to affect local fuel availability or to require additional energy sources. Additional energy would also be consumed by congested or slowed traffic during various phases of construction.

Mitigation

No specific energy consumption mitigation measures are proposed for the construction phases of the proposed project.

4.22.21 Geology and Soils

During construction phases of the build alternatives, soil and geology impacts would be the same as those discussed in *Section 4.21.2, Build Alternatives.*

Mitigation

For the construction phases of the proposed project, follow the construction-related mitigation measures proposed in *Section 4.22.10, Water Flow and Quality*.

4.22.22 Construction Schedule and Method

The contractor would determine specific construction methods while bidding on the contract for the proposed project. These methods would be subject to MDT approval. In general, highway construction could involve the following types of actions, depending on the alternative chosen:

- Reconstruction and widening of the existing roadways
- Bridge construction and demolition
- Utility adjustments
- Construction of new roadways and approaches
- Grading
- Draining
- Irrigation adjustments
- Wetland mitigation
- Placement of retaining walls, curbs, gutters, and pavement

Because of weather constraints, the heavy construction season generally runs from April 15 to November 15.

Design and right-of-way acquisition might take 2 to 3 years. The construction phases could also take 2 to 3 years to complete. The design and construction process could immediately follow the EIS Record of Decision, depending on the timing and availability of funds. It is anticipated that actual construction would occur in the 2010 to 2014 period. The proposed project might be constructed in stages, depending on the availability of funds.

4.23 Local Short-Term Uses and Long-Term Productivity

Local short-term uses of the human environment are related to the maintenance and enhancement of long-term productivity. Construction of the proposed improvements to US 212 would result in short-term impacts. These impacts would include traffic disruption during construction of the new alignment that could, in the short term, affect local traffic flow and access to residences, businesses, and farmlands.

Short-term impacts related to other resources would also be expected (see *Section 4.22, Construction Impacts Related to the Proposed Project*). Mitigation measures have been proposed and would be implemented to offset these impacts.

The proposed improvements to US 212 would be consistent with local and regional planning for land use and the transportation corridor. Benefits related to the support and contribution to the long-term viability of the towns within the study corridor, to Carbon and Yellowstone counties, and to Montana would outweigh the local short-term impacts anticipated from implementation of the proposed project.

4.24 Irreversible and Irretrievable Commitments of Resources

Construction of the proposed reconstruction of US 212 and associated project features would involve a commitment of many resources that would be permanently consumed or lost or that would most likely not revert to their previous uses. These resources include:

- Physical resources, such as construction materials and petroleum products
- Monetary resources, such as public funding used for construction
- Natural resources, such as land converted to highway uses from other uses
- Human resources, such as labor used to construct the new facilities

The benefits associated with the proposed project would outweigh the resources that would be irreversibly and irretrievably committed.

4.24.1 Physical Resources

Large quantities of highway construction materials, such as cement, bituminous materials, and aggregates, would be expended during construction of the proposed project. Large amounts of fossil fuel would also be expended. The fabrication and preparation of construction material would use a large quantity of natural resources. The use of these materials and natural resources would be irreversible and irretrievable. However, these materials are not in short supply. Using them to construct the proposed project would not have an adverse effect on the availability of these resources in the future.

4.24.2 Monetary Resources

A substantial commitment of federal and state funds would be required for constructing the proposed project, and these funds are not retrievable. However, the use of these funds is expected to provide benefits to the people of Montana, the region, and the country that outweigh the expenditure of the funds. These benefits would include improved safety, mobility, and accessibility. The increase in safety, mobility, and accessibility would reduce travel times by increasing the efficiency of travel. It is anticipated that these benefits would outweigh the commitment of funding resources.

4.24.3 Natural Resources

The commitment of land for the highway facility would represent an irreversible commitment during the time frame that the land was used for this purpose. Irrigated and non-irrigated farm and pasture lands, as well as wetlands, would be committed. If a greater need for the land arose in the future or the highway facility was no longer needed, the land could be converted to another use. However, it is believed that this conversion to another use would not be feasible or desirable.

4.24.4 Human Resources

The efforts of the people employed to construct the proposed project would not be retrievable. However, since laborers are available, employing them to construct the proposed project would not adversely affect the continued availability of the labor supply.

4.25 Cumulative Impacts

This section provides information about other pending or ongoing activities and a summary of cumulative impacts.

4.25.1 Other Pending or Ongoing Activities

The number of new housing units in the county increased by more than 17 percent from 1990 to 2000. During that time, the county processed 270 subdivision applications. When visiting the project area, ongoing development is underway and very evident in the houses that have been constructed in the years that this project has been under evaluation. In spite of the evidence on the ground and multiple interviews of City and County personnel, no private developments or planned developments have been identified in the City of Laurel (Cumin, pers. comm., 2006), Carbon County (Davidson, pers. comm., 2006), or Yellowstone County (Friday, pers. comm., 2006) that might affect or be affected by the proposed project.

MDT has identified various transportation projects that have the potential for interaction with the Rockvale to Laurel project (Nelson, pers. comm., 2004; Neville, pers. comm. 2006). Those transportation projects were considered in the cumulative impact assessment. Each transportation project is briefly discussed in the following text, along with assessments of potential cumulative impacts. Ongoing agricultural activities could interact with the transportation projects and have been included in the analysis.

1. **Corridor Study-Red Lodge North–STPP 28-2(25)70, CN 4375.** The Red Lodge US 212 road reconstruction project would be located approximately 19.3 km (12 mi) from the Rockvale to Laurel project area. This project's limits would extend from RP 70 to RP 90 on US 212. Funds have possibly become available to finish design and build the first 2 miles of the urban section of this project. Although no official date has been set in MDT's Tentative Construction Plan (Red Book), this project might begin around 2008. Although timing is uncertain, the Red Lodge US 212 project is considered in the cumulative impact assessment because of its location along Rock Creek, which flows through the Rockvale to Laurel project area, and the possibility that the two projects could occur within a similar time frame.
2. **Red Lodge-Northwest–STPP 78-1(11)0, CN 4890.** The Red Lodge State Highway 78 project would reconstruct Montana State Highway 78 from RP 0 to RP 5.1. This project would intersect US 212 at Red Lodge, about 53.1 km (33 mi) from the Rockvale to Laurel project area. Project limits are in proximity to Rock Creek and it is likely that sections of the construction area would drain into Rock Creek. The timing of this project

is uncertain, and construction is not expected until 2010 or later. However, the Red Lodge State Highway 78 project is considered in the cumulative impact assessment because of its proximity to Rock Creek and the possibility that the two projects could occur within a similar time frame.

3. **Bridger-South–NH 4-1(19)13 F, CN 3179.** This project would rehabilitate a portion of US 310 between RP 12.6 and RP 25.676. The project would be located south of Bridger along Bridger Jack Creek, a tributary to the Clarks Fork Yellowstone River. Sections of the roadway would be pulverized and a new surface applied. Other areas would be widened and resurfaced. The project is scheduled for 2010. This project is within the Clarks Fork Yellowstone River watershed and, therefore, has the potential to interact with the Rockvale to Laurel Project.
4. **Wyoming Line-Belfry–STPP 72-1(8)0, CN 4065.** The Wyoming Line-Belfry project would be to reconstruct MT 72 between the Wyoming State Line and the Town of Belfry (RP 0 to 10.54). The entire roadway would be reconstructed, which includes widening, a new overlay, and correction of horizontal and vertical alignment deficiencies. The project will be let in July 2006. The project would parallel the Clarks Fork Yellowstone River, sometimes very closely, and would include a bridge over the river. The Wyoming Line-Belfry project might interact with the Rockvale to Laurel project since it would be in the same watershed. A Categorical Exclusion is being prepared for this project, which indicates that minimal impacts are expected from the project.
5. **Belfry-North–STPP 72-1(5)10, CN 1016.** With the Belfry-North project, approximately 16.3 km (10.1 mi) of MT 72 would be reconstructed between Belfry and US 310 to the south (RP 10.54 to RP 21.42). Sidewalks and other improvements would be constructed in the town portion. Shoulder widening, horizontal and vertical improvements, clear zone improvements, and side-slope flattening would be constructed in the rural portion. Several bridges of the Clarks Fork Yellowstone River would be improved, as would bridges on several tributaries to the Clarks Fork Yellowstone River. This project, because of cost, will be split into two projects. The first part is 2.3 miles, starting at Belfry with a new alignment and ending where it connects back into the old alignment after a new river crossing. The expected cost is $5,000,000 in 2008. The Belfry-North project might interact with the Rockvale to Laurel project since it would be in the same watershed.
6. **Clarks Fork-Fromberg–BR 9005(25), CN4243.** A three-span, single-lane bridge over the Clarks Fork Yellowstone River would be replaced. The new bridge would be a three-span, two-lane bridge. The bridge is on Carbon County Local Route 307 (locally known as East River Street) about 1 km (0.6 mi) east of Fromberg. Impacts to wetland or aquatic species are not anticipated during construction. The bridge is on the NRHP, so a marker that included photographs of the current structure and text would be placed near the new structure. Construction is scheduled for 2007.
7. **8th Ave-Main to 9th-Laurel–STPU 6905(2), CN 3927.** This project will reconstruct 8th Avenue in the City of Laurel. It is scheduled for 2009. There may be some air emissions from this project that could combine with air emissions from the proposed Rockvale to Laurel project if construction occurred simultaneously.

8. **Bridger-Fromberg–NH 4-1(40)26, MT 72 (N-4), CN 5725000.** This is a surfacing rehabilitation project on MT 72 from RP 26.2 to RP 33.80. It is scheduled for 2010. Project limits are in proximity to Rock Creek and would have the potential to accidentally discharge pollutants into Rock Creek.

4.25.2 Summary of Cumulative Impacts

In accordance with 40 CFR 1508.7, MDT and FHWA have evaluated cumulative impacts in the project area. Cumulative impacts are the impacts on the environment that result from incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes those other actions. This section describes the cumulative impact analysis. The cumulative impacts addressed include the following:

- Land use
- Farmlands
- Social conditions
- Economic conditions
- Water quality
- Wetlands
- Water bodies and aquatic resources
- Vegetation and Wildlife resources
- Floodplains

The proposed project is not expected to contribute to cumulative effects for the following resources: transportation right-of-way and relocations; environmental justice; pedestrian and bicycle considerations; air quality; noise; threatened and endangered species and state species of concern; cultural resources; hazardous materials; visual resources; energy consumption; and geology and soils. Some of the reasons why these resources are not considered include the following:

- Other than the proposed US 212 project, none of the actions identified in *Section 4.25.1, Other Pending or Ongoing Activities*, would contribute to displacements within the proposed US 212 project corridor.

- Since the proposed project includes wider shoulders, rectifying past actions that have limited bicyclist and pedestrian use of US 212, no cumulative impacts are expected.

- In the project area, since ambient noise levels are low and air quality is good, noise and air quality are not likely to become issues of concern. It is not expected that traffic levels with the proposed project would increase beyond those predicted for regional growth with the No Build Alternative. Therefore, the proposed project is not expected to contribute to cumulative impacts on noise or air quality in the project area.

- Since neither threatened and endangered species nor state species of concern would be adversely affected in the project corridor, no cumulative impacts are expected.

- Potential cumulative impacts on public services and utilities would be eliminated by coordination of the project with utility companies.
- Since the proposed project area does not contain known or documented release sites, past actions, future actions, and the proposed project are not expected to contribute to cumulative impacts from hazardous materials in the project corridor.
- Since they would occur in developed areas, both present and future actions are not expected to contribute to additional impacts on the visual quality of the roadway corridor.

4.25.2.1 Land Use

The above-stated projects, for the most part, are located within Carbon County (except for a small portion of the Rockvale to Laurel Project and the 8th Avenue Project in Laurel) and will be expected to comply with the general policies and objectives outlined in the Carbon County Growth Policy (2003). It is anticipated that the above-stated projects will require additional rights-of-way and that some agricultural lands, range lands, and open space will be converted to different uses.

4.25.2.2 Farmlands

Because of the prevalence of agricultural lands within the areas of the various projects, it is likely that some designated prime if irrigated and statewide-important farmlands, as well as other agricultural lands, would be impacted. The larger projects, such as the Red Lodge North, Wyoming Line-Belfry, and the Belfry-North projects, would probably impact more agricultural land than smaller projects like the Red Lodge-Northwest project or urban projects like the Laurel 8th Avenue project. However, because of MDT’s commitment to minimize farmland impacts throughout the concept and design of projects, cumulative farmland impacts, would not be significant.

4.25.2.3 Social Conditions

Traffic is likely to be subject to delays due to construction of the transportation projects. Traffic congestion and possible lane blockage during construction of the Rockvale to Laurel and Red Lodge-North projects might hinder accessibility to the Red Lodge resort community and ski lodge and to Yellowstone National Park. If the construction phases of the Rockvale to Laurel and Red Lodge-North projects overlap, it is probable that there would be cumulative impacts to transportation along the US 212 corridor between Red Lodge and Laurel. To minimize impacts, a traffic control plan would be required with a response strategy for emergency vehicles needing to travel through the construction area. The traffic control plan would also address coordination of the construction phases of the various projects to minimize impacts to the largest extent practicable.

Traffic patterns are not expected to change as a result of the effects of the cumulative projects. Through traffic will continue to travel through the area on new or improved routes, and local traffic will access businesses, properties and services in the same manner as they currently do. Cumulative traffic impacts are not expected with the other projects.

4.25.2.4 Economic Conditions

Negative impacts on the regional economy associated with the listed cumulative projects are not anticipated because of the small size of the projects. Several positive impacts include temporary benefits (because of the demand for subcontractors and skilled and unskilled laborers within the area); improvements to the state's transportation infrastructure and transportation-based businesses; and increased tourist traffic through the area, especially in the summer months. Therefore, beneficial cumulative economic impacts are expected.

4.25.2.5 Water Quality

It is expected that construction activities associated with the projects listed could directly and indirectly affect water quality in the Clarks Fork Yellowstone River and Rock Creek, as well as associated canals, ditches, and tributaries. It is anticipated that construction has the potential to temporarily cause both soil disturbances and siltation of the drainages at bridge and culvert replacement sites. However, with implementation of measures to avoid water quality impacts during transportation construction projects, water quality impacts related to these projects would be minimal when compared to water quality effects from agricultural practices and rural development. The incremental impacts of transportation projects, when added to agricultural and rural development projects, would not result in significant water quality impacts.

4.25.2.6 Wetlands

Although the projects are only in the planning stages, it is unlikely that impacts on jurisdictional and non-jurisdictional wetlands and riparian areas could be totally avoided, with the exception of the Clarks Fork-Fromberg project, the Wyoming Line-Belfry project, and the Laurel 8th Avenue project. Current regulatory policy requires mitigation of impacts to jurisdictional wetlands from transportation and other projects, so there should be no net loss of wetland functions and values in the cumulative effects project area. Because each project individually would not result in uncompensated wetland impacts, cumulative wetland impacts are not expected.

4.25.2.7 Water Bodies and Aquatic Resources

Since many of the aforementioned projects would be constructed near water bodies, they would have the potential to affect water bodies and aquatic resources. However, the increase in impervious surfaces resulting from implementation of these projects would be negligible relative to the size of the area in which these projects are located. Therefore, minimal or no effects on water bodies and aquatic resources would be expected. In addition, implementation of BMPs and mitigation measures, including erosion control, would avoid or minimize impacts. Since aquatic resources or water bodies are not expected to be significantly impacted by the other projects or by the build alternatives, cumulative impacts to aquatic resources or water bodies are not expected.

4.25.2.8 Vegetation and Wildlife Resources

Habitat for wildlife would be avoided or protected through BMPs on MDT projects. If an impact could not be avoided, mitigation is proposed for compensation. Since avoidance and mitigation would be coupled with the distance to the other projects from the Rockvale to Laurel project, cumulative impacts to wildlife resources are not expected.

Habitat for sensitive species would be avoided or protected through BMPs on MDT projects. If an impact could not be avoided, mitigation is proposed for compensation. Since avoidance and mitigation would be coupled with the distance to the other projects from the Rockvale to Laurel project, cumulative impacts to sensitive species are not expected.

4.25.2.9 Floodplains

Significant impacts in floodplains are prohibited by law; therefore, the projects identified in the cumulative impacts assessment, including this one, are designed in a manner to avoid floodplain impacts that would result in a significant increase in flood levels. Therefore, minimal cumulative impacts would be expected as a result of constructing the Rockvale to Laurel project.

4.26 Major Unresolved Issues

Based on the analyses in this chapter, no major unresolved issues were identified.

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CHAPTER 5 LIST OF PREPARERS

The responsibilities and qualifications of the consultant and the subconsultant team that prepared the environmental impact statement are listed below.

Preparer/Affiliation	Role	Education and Experience
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David Baker, P.E. CH2M HILL	Alternatives Development, Engineering Support, Conceptual Design	B.S., Civil Engineering; 12 years of experience.
Gloria Beattie, P.E. CH2M HILL	Floodplains	M.S., Civil Engineering; B. S., Civil Engineering; 17 years of experience.
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Maria Dudash CH2M HILL	Water Quality, Floodplain, Visual Resources, Hazardous Materials, Soils and Geology, Cultural Resources, Land Use, Transportation, Energy	B.S., Environmental Resource Management; 9 years of experience.
Jody Fagan CH2M HILL	Graphics	B.F.A., Associate Applied Science; 29 years of experience.
Judy Ferguson CH2M HILL	Biological Resources	M.S., Rangeland Ecology; B.S., Range Resources; B.S., Wildlife Biology; 11 years of experience.
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Jonathan Matthews CH2M HILL	Air Quality, Water Quality, Pedestrian and Bicycle, Social, Economic, Farmland, Land Use, Transportation, Relocation	B.S., Environmental Biology; A.A., Forestry; 18 years of experience.
Denny Mengel, Ph.D. CH2M HILL	EIS Team Leader	Ph.D., Soil Sciences; M.S., Forestry; B.S., Wildlife Resources; 23 years of experience.
Eric Wolin CH2M HILL	Energy, Land Use, Hazardous Substances, Geology	B.A., Planning and Environmental Policy; 5 years of experience.
Sean Connolly Big Sky Acoustics	Noise Analysis	M.S., Mechanical Engineering; B.S., Mechanical Engineering; 11 years of experience.
Lynn Peterson Ethnoscience, Inc.	Cultural/ Historic Resources, Native Consultation	M.S., Anthropology; 14 years of experience.
James Strait Ethnoscience, Inc.	Cultural/ Historic Resources, Native Consultation	M.A., Archaeology; B.A., Archaeology; 11 years of experience.

Preparer/Affiliation	Role	Education and Experience
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Sue Kutzler Fischer & Associates	Visual Analysis, Public Participation	28 years of experience.
Sylvia Medina North Wind Environmental	Hazardous Waste	M.S., Waste Management (Chemical Engineering); B.S., Environmental Engineering; B.S., Biology; 18 years of experience.

Additional reviewers from the Federal Highway Administration and the Montana Department of Transportation are listed below:

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Theodore G. Burch, P.E., Program Development Engineer, Federal Highway Administration, Montana Division, Helena
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Bruce H. Barrett, Billings District Administrator, Montana Department of Transportation
Gary Neville, Engineering Services Supervisor and EIS Reviewer, Billings District, Montana Department of Transportation
Dave M. Hill, Biologist; Environmental Services Bureau; Montana Department of Transportation
Tom S. Martin, P.E., Consultant Design Manager and EIS Reviewer, Montana Department of Transportation
Jean A. Riley, P.E., Engineering Section Supervisor, Environmental Services, Montana Department of Transportation
Mark J. Studt, P.E., Consultant Project Engineer and EIS Reviewer, Montana Department of Transportation

CHAPTER 6 DISTRIBUTION LIST

This chapter provides information about distribution lists for:

- Federal agencies
- State agencies
- Local agencies
- Public copies

6.1 Federal Agencies

U.S. Department of Agriculture
Natural Resources Conservation Service
Joliet Field Office
606 W. Front
Joliet, MT 59041
Attn: Gordy Hill, District Resource Conservationist

U.S. Department of Agriculture
Natural Resources Conservation Service
1629 Avenue D, Building A
Billings, MT 59102
Attn: Shad Webber, District Resource Conservationist

U.S. Army Corps of Engineers
Omaha District Planning Division
106 S. 15th Street
Omaha, NE 68102-1618
Attn: Candace Gorton, Environmental and Economic Section

Helena Regulatory Office
10 W. 15th, Suite 2200
Helena, MT 59626
Attn: Allan Steinle, Montana Program Manager
Todd Tillinger, Project Manager

Also to be distributed by FHWA:

U.S. Department of the Interior
Washington, DC
Fish and Wildlife Service
Lou Hanebury, Biologist
Fish and Wildlife Service, Montana Field Office
R. Mark Wilson, Field Supervisor

U.S. Environmental Protection Agency
Washington, DC

6.2 State Agencies

Montana Department of Environmental Quality
Attn: Jan Sensibaugh, Director
Tom Ellerhoff, Administration Officer
Tom Reid, P.E., Supervisor, Water Protection Bureau
Steve Welch, Administrator, Permitting & Compliance Division

Montana Department of Natural Resources and Conservation
1625 11th Ave.
P.O. Box 201601
Helena, MT 59620-1601
Attn: Mary Sexton, Director

Southern Land Office
Airport Park, Building IP9
Billings, MT 59105
Attn: Sharon Moore, Area Manager

1371 Rimtop Drive
Billings, MT 59105
Attn: Keith Kerbel, Regional Manager

Montana Environmental Quality Council
Office of the Director
Capitol Post Office
P.O. Box 215
Helena, MT 59620

Montana Fish, Wildlife & Parks
P.O. Box 200701
Helena, MT 59620-0701
Attn: M. Jeff Hagener, Director
Glenn R. Phillips, Chief of Habitat and Protection Bureau Fisheries Division

2300 Lake Elmo Drive
Billings, MT 59105
Attn: Gary Hammond, Regional Supervisor
Ken Soderberg, Resource Program Manager

Montana Governor's Office
Executive Office
Room 204, State Capitol
Helena, MT 59620-0801
Attn: Governor Brian Schweitzer

Montana Highway Commission
2037 Ridgeview Drive
Billings, MT 59105-3636
Attn: William T. Kennedy, Chairman

Montana State Library
1515 E. 6th Ave.
P.O. Box 201800
Helena, MT 59620-1800
Attn: Roberta Gebhardt, Collections Management Librarian

Montana State Historic Preservation Office
1410 8th Avenue
P.O. Box 201202
Helena, MT 59620-1202
Attn: Dr. Mark Baumler, Historian

6.3 Local Agencies

Crow Tribal Council
Crow Tribal Headquarters
P.O. Box 159
Crow Agency, MT 59022-0159
Attn: Carl Venne, Tribal Council Chairman
Alvin Not Afraid, Transportation Planner
Andrew Old Elk, Environmental Protection Program Director

Yellowstone County Commissioners
P.O. Box 35000
Billings, MT 59101-5000
Attn: Bill Kennedy
John Ostlund
Jim Reno

Carbon County Commissioners
P.O. Box 887
Red Lodge, MT 59068-0887
Attn: John Prinkki
Albert Brown
David Davidson

6.4 Public Copies

Copies of this document will be available at the following Montana locations:

Billings: MDT Billings District Office
424 Morey

Parmly Billings Library
510 N. Broadway

Yellowstone County Commissioners Office
217 North 27th Street, Room 403

Helena:	Montana State Library 1515 E. 6th Ave.
Joliet:	Joliet Community Library 300 N. Park Street
Laurel:	Laurel Public Library 720 W. Third Street
Red Lodge:	Carbon County Commissioners' Office 17 W. Eleventh St.
	Carnegie Library 3 West 8th

CHAPTER 7 COMMENTS AND COORDINATION

The procedures for preparing a draft environmental impact statement emphasize cooperative consultation among agencies and the early and continued involvement of people who may either be interested in or affected by the proposed project. This chapter documents the specific elements for the public and agency involvement program, including:

- Agencies contacted
- Cooperating agencies
- Public scoping meetings
- Agency scoping meeting
- Comments
- Future public involvement and information activities

7.1 Agencies Contacted

This section provides information about agencies with jurisdiction and/or permitting authority and other agencies, groups, or persons that have been contacted or that have contributed information.

7.1.1 Agencies with Jurisdiction and/or Permitting Authority

The following agencies have jurisdiction and/or permitting authority:

- Advisory Council on Historic Preservation (Review "Determination of Effect")
- Carbon County (FEMA Floodplain Development Permit)
- Federal Highway Administration
- Montana Department of Environmental Quality (MPDES authorization)
- Montana Fish, Wildlife and Parks (SPA 124)
- Montana Department of Natural Resources and Conservation
- Montana Department of Transportation
- Montana Environmental Quality Council
- Montana Governor's Office
- Montana Highway Commissioners
- Montana State Historic Preservation Office (Concur with "Determination of Effects")
- U.S. Army Corps of Engineers (CWA, Section 404 Permit)
- U.S. Environmental Protection Agency
- U.S. Fish and Wildlife Service (Section 7, ESA Consultation)

7.1.2 Other Agencies, Groups, or Persons

Other agencies, groups, or persons that have been contacted or that have contributed information include the following:

- Beartooth Resource Conservation and Development, Carbon County
- Billings Planning Department
- Carbon County Clerks and Tax Assessors Office
- Carbon County Commissioners
- Carbon County Planning Department
- Carbon County Public Assistance
- Haus of Realty
- Laurel Administrative Office
- Laurel Ambulance Service
- Laurel Chamber of Commerce
- Laurel Planning Department
- Laurel Public Works
- Montana Bureau of Mines
- Montana Dakota Utility
- Montana Fish, Wildlife and Parks
- Montana State Historic Preservation Office
- Montana Power
- U.S. Fish and Wildlife Service
- USDA Natural Resources Conservation Service, Carbon County
- USDA Natural Resources Conservation Service, Yellowstone County
- Yellowstone County Planning Department
- Yellowstone Valley Electric

7.2 Cooperating Agencies

7.2.1 Agency Involvement

Agencies with jurisdiction within the proposed project's study area were contacted to be cooperating agencies. The agencies that responded and indicated their commitment as cooperators are Montana Fish, Wildlife and Parks; U.S. Army Corps of Engineers; U.S. Fish and Wildlife Service; and U.S. Natural Resources Conservation Service. The U.S. Environmental Protection Agency did not commit to being a cooperating agency, but it did express interest in being kept updated with the proposed project's progress and would provide comments when requested. Agency response letters are included in *Appendix G, Coordination Letters*. The Montana Department of Environmental Quality declined to be a cooperating agency.

7.2.2 Cooperating Agency Meeting

A meeting was held May 2, 2001, with the cooperating agencies, to provide information about the proposed US 212 project and to discuss the Biological Resources Work Plan. Since a field review had been conducted on November 1, 2000, during the Agency Scoping Meeting (see *Section 7.4, Agency Scoping Meeting*), a field review was not held. The alternatives under consideration were discussed to inform the agencies about the proposed project. Alternatives that were dropped were also described, along with the reasons for their removal from the subsequent EIS process.

The following issues were discussed at the cooperating agency meeting:

- Wetlands, the need for formal delineations using the *Wetland Delineation Manual* (COE, 1987), and requirements for the Montana Wetland Functional Assessment
- Noxious weeds
- Restoration seed mixes
- Floodplain effects
- Wildlife issues including deer migration, wildlife crossings, and waterfowl
- Water quality in Rock Creek
- Proposed project effects on pool/riffle ratios in Rock Creek
- Threatened, endangered, and sensitive species, including prairie dog, mountain plover, swift fox, bald eagles, and Ute ladies'-tresses orchids.

7.3 Public Scoping Meetings

Planning for the three public scoping meetings included determining appropriate locations for the meetings, providing widespread notification of the meetings in the project area, and conducting the meetings in a manner that would provide information about the proposed project and an opportunity for people to identify issues to be addressed in the EIS. Table 7-1 summarizes meeting locations, times, and attendance at the public scoping meetings.

TABLE 7-1
Public Scoping Meetings for the Rockvale to Laurel US 212 Reconstruction Project

Location	Date	Time	Attendance*
Graff Elementary School Laurel, Montana	August 30, 2000	4:30 to 8:30 p.m.	108
South Elementary School Laurel, Montana	November 13, 2000	4:30 to 9:00 p.m.	130
Graff Elementary School Laurel, Montana	December 12, 2001	4:30 to 8:30 p.m.	132

*Attendance includes project sponsors and staff

7.3.1 Notification Process Used

Public outreach activities were conducted to inform the community that the public scoping meetings would be held. News releases were sent to print and broadcast media to promote the meetings. Advertisements were placed in local papers several days before the meetings. In addition, the local media assisted by airing public service announcements and placing notices of the meetings in various community calendars. Fliers were also posted throughout the local community. A local television news station covered the second meeting. Postcards announcing the public meetings were sent to businesses; local agencies and governments; landowners in the project area; and residents expressing interest in the proposed project.

Table 7-2 lists public relations notices and media coverage for the first two public scoping meetings held in 2000.

TABLE 7-2
Public Relations Notices for Public Scoping Meetings Held in 2000—US 212 Reconstruction, Rockvale to Laurel EIS Project

Media Name	Announcement Type; Date
Advertisements	
Laurel Outlook	Advertisement; August and November, 2000
Billings Gazette	Advertisement; August and November, 2000
Carbon County News	Advertisement; November, 2000
Public Service Announcements	
KTVQ, Channel 2	Meeting Announcements
KULR, Channel 8	Meeting Announcements
KSVI, Channel 6	Meeting Announcements
KBLG	Meeting Announcements
Media Coverage	
Carbon County News	Story; Friday, November 3, 2000
Carbon County News	Story; Wednesday, November 8, 2000
Billings Gazette	Story; Tuesday, November 14, 2000
Laurel Outlook	Story; Tuesday, November 14, 2000
Carbon County News	Story; Wednesday, November 29, 2000
KTVQ-2	Story; Monday, November 13, 2000; 10 p.m.
KTVQ-2	Story; Tuesday, November 14, 2000; 6 a.m.

For the third public scoping meeting, which was held on December 12, 2001, meeting advertisements were developed by the consultant and forwarded to MDT for placement. Press releases were sent to local newspapers as well as to television and radio stations.

7.3.2 Public Scoping Meeting 1 (August 30, 2000)

The first public scoping meeting, held on August 30, 2000, from 4:30 to 8:30 p.m., was conducted in an open-house format. The purpose of the meeting was to invite comments from the public on the scope of the issues to be addressed in the EIS. This meeting was also used to assist in the development of a mailing list of interested individuals and organizations. Advertisements indicated this to the public prior to the meeting.

A series of six stations, some having stand-up picture boards, were located at the meeting to facilitate discussion. The boards described the need for the proposed project, facts about the proposed project, the NEPA process, possible project corridors where alternative alignments could be located, the project schedule, and potential environmental and engineering issues. Maps showing each potential corridor were located around the meeting room, with a comment sheet adjacent to each map on which people could write comments specific to issues for that particular corridor. A large aerial photograph showing the entire project area and potential corridors was laid out. People could write comments directly on the photograph. Participants were able to roam around the meeting and visit each station. Individuals familiar with the proposed project and the station subject matter staffed the stations. The meeting participants could ask questions and offer comments at each station. Forms were also given to each participant to encourage and provide a format for comments, if desired. A tape recorder, a computer with word processing software, and an individual to write comments were also available for those desiring alternative means for commenting. Formal presentations by project sponsors and staff to describe the proposed project were made at 5:30 p.m. and 7:30 p.m. A question-and-answer session followed each presentation. Questions and comments were recorded.

7.3.3 Public Scoping Meeting 2 (November 13, 2000)

The second public scoping meeting, held on November 13, 2000, from 4:30 to 9:00 p.m., was conducted in an open-house format. The objective of this public meeting was to solicit public comment on the alternatives that were developed based on input from the first public meeting. Consensus was also sought on which issues and alternatives were significant enough to warrant full discussion or analysis in the EIS. The stand-up exhibits shown at the first public meeting were again available for public review. Four additional stations, some with stand-up picture boards, were displayed at this meeting. Other materials included frequently asked questions with answers, a summary of comments received prior to the meeting, a display of venues for public comment, a summary of planning issues, and the schedule. Aerial photo maps showing the four potential new alignments for the proposed project were displayed, as were the issues identified for each potential alignment in Public Scoping Meeting 1. Comment sheets for each map were attached for public comment on that alternative alignment. People were also encouraged to write comments directly on each map. Participants were able to roam around the meeting and visit each station. Individuals familiar with the proposed project and the station subject matter staffed the stations and maps. Formal presentations by project sponsors and staff to describe the proposed project were made at 5:30 p.m. and 7:30 p.m. A question-and-answer session followed each presentation. Questions and comments were recorded. The methods of comment described in

Section 7.3.1, Public Scoping Meeting 1 (August 30, 2000), were also available at Public Scoping Meeting 2.

7.3.4 Public Scoping Meeting 3 (December 12, 2001)

The third public scoping meeting to discuss the proposed reconstruction of US 212 between Rockvale and Laurel was held on December 12, 2001, from 4:30 p.m. to 8:30 p.m. in an open-house format with informational displays. This meeting followed up on the November 13, 2000, meeting, which had updated the public and solicited comments on preliminary alternative road locations. The purpose of the meeting, hosted by the MDT, was to update the public, solicit additional comments on preliminary alternative road locations, and review Technical Reports. Attendees were asked to review displays and comment on three alternative alignments.

The following topics are discussed in this section:

- Meeting attendees
- Materials available
- Presentations
- Formats for public comment
- Meeting results

7.3.4.1 Meeting Attendees

Approximately 132 people attended the meeting, including many property owners and local government representatives from Yellowstone and Carbon counties and from the cities of Laurel, Red Lodge, Silesia, Fort Rockvale, Boyd, Joliet, and Roberts. MDT was well represented, with participation from the local district office and from Helena. MDT representatives included Ed Larson, MDT Consultant and Design Project Engineer; Bruce Barrett, MDT Billings District Administrator; Gary Neville, MDT District Engineer Services Supervisor; and Brent McCann, MDT Right-of-Way Supervisor. The consultant team was represented by the following team members: Steve Alters, CH2M HILL Project Manager; Denny Mengel, CH2M HILL EIS Principal Author; Jonathan Matthews, CH2M HILL Socioeconomics and Land and Physical Resources Task Leader; Sandy Fischer, Fischer & Associates Public Process Manager; Sue Kutzler, Fischer & Associates Planning Assistant and Public Record Keeper; Peggy Moon, Fischer & Associates Administrative Assistant; Kelly Quinn, Fischer & Associates Graphic Designer and Planning Assistant; and Tamara Galon, Fischer & Associates Administrative Assistant.

7.3.4.2 Materials Available

Materials at the meeting included the exhibits that had been displayed at the first and second public meetings along with new materials. New materials included a revised project schedule; three alignment alternatives displayed on the large aerial photo that was used in the previous meeting to describe alternative corridors; displays summarizing comments recorded after the Scoping Report; a prototypical cross-sections exhibit illustrating 64-ft, 80-ft, and

100-ft sections; a comparison table outlined by alternative; a list of technical reports available; questions pertaining to the “planning and width”; where the information for the comparison matrix came from and what its purpose was; the next step in the planning process; and land use, biological, and environmental maps.

7.3.4.3 Presentations

Formal presentations by project sponsors and staff to describe the proposed project were made at 5:30 p.m. and 7:30 p.m. Speakers included Bruce Barrett, MDT District Administrator, and Steve Alters, Project Manager for CH2M HILL. Following the presentations, a question-and-answer session provided attendees an opportunity to ask questions. Bruce Barrett answered most of the questions.

Steve Alters explained that CH2M HILL is the author of the Draft EIS and is responsible for the preliminary design of the proposed project. The process to date was reviewed. This process included the NEPA process, public input, field work, alternative development, technical studies, the comparison matrix, the selection of the Preferred Alternative, and the Draft EIS.

Bruce Barrett reviewed the three alternative cross-sections and explained that the final design might include a mixture of these alternatives.

- **64-ft Section:** This section is similar to the road south of Laurel. It includes four travel lanes and a continuous center turn lane. In high-speed environments, this type of road does not work as well as roads with medians.
- **80-ft Section:** This is not a typical cross-section. It was developed specifically for the proposed project. It has been assumed that a turning lane would be needed each mile for the first 6 miles. Each turning lane would require transitions and storage bays, approximately 3/4-mile long. The 16-ft-wide median would provide beautification and safety.
- **108-ft Section:** The 108-ft-wide section is similar to, but not quite as wide as, a typical interstate highway.

7.3.4.4 Formats for Public Comment

The meeting was designed to allow several formats and opportunities for public comment. These commenting opportunities included the following:

- Attendees were encouraged to sign in at the registration table. The registrants’ names were added to the master mailing list, if they had not previously been included, so they would be able to receive future meeting notices and newsletters.
- Members of the design team staffed groups of displays at each of four stations. Comments were recorded and incorporated into the comment record.

- Four formats for comments were provided at the public meeting. These formats included a laptop computer, a person to transcribe comments, a tape recorder to record verbal comments, and a survey form.

7.3.4.5 Meeting Results

Products of the third public meeting included the comment record, an expanded mailing list, the meeting record, and responses to questions.

MDT made the following commitments at the public scoping meeting:

- Comments on specific alignments would be reviewed to help determine if additional alignments should be developed and assessed.
- New information would be posted on the website.
- Attendees of the previous meeting would be notified of future meetings.
- A newsletter would be prepared upon completion of the Draft EIS or at the point in time a Preferred Alternative was selected by MDT. Meeting attendees and those on the mailing list would receive the newsletter.
- A record of public comment would be maintained.
- Questions, answers, and comments would be summarized for inclusion in the newsletter and on the website.
- The team would continue to accept comments via telephone, e-mail, or mail for the duration of the planning and environmental documentation phases.

7.4 Agency Scoping Meeting

A scoping meeting for state and federal natural resource and regulatory agencies was conducted on November 1, 2000, at MDT's Billings office. The objectives of the meeting included determining the needs and regulatory requirements of the agencies; allocation assignments; coordinating review and consultation requirements and schedules; identifying permitting requirements; and discussing additional meetings. The meeting was attended by representatives from the U.S. Environmental Protection Agency; the U.S. Fish and Wildlife Service; Montana Fish, Wildlife and Parks; the U.S. Army Corps of Engineers; and the U.S. Department of Agriculture Natural Resources Conservation Service. The proposed project alignments were presented to the agencies and an opportunity to comment was provided. A field tour to visit the project area was conducted. Comments made during the meeting and tour were recorded.

7.5 Comments

This section provides information about methods that have been used for commenting on the proposed project. Table 7-3 summarizes the number of comments received using various commenting methods.

TABLE 7-3
Numbers of Comments by Commenting Method

Method of Comment	Number of Comments
E-mail	121
Letter	108
Phone Call	22
Personal Interview	59
Public Meeting	381
Other	5

7.5.1 Written Comments

At the public scoping meetings, interested parties were invited to submit written comments, either by letter or on comment forms. Frequently, several comments were included on one form. The tabulation in Table 7-3 represents individual comments, not individual letters or forms. Additional comments were generated by allowing the public to write directly on the presentation materials for the proposed project. Comments have also been received by e-mail.

7.5.2 Verbal Comments

A project-dedicated phone line was established for the early public information meetings to allow the public to talk directly to project staff or to leave recorded comments. Other comments were received at the public scoping meetings via personal interviews.

7.5.3 Small Group Meetings

Three small group meetings have been conducted related to the proposed project.

- **December 12, 2001**. During Public Meeting 3, a one-on-one policymaker meeting was held with The Honorable William E. Glaser, Representative SD 08, Montana. The following issues were discussed: the NEPA process, Alternative 4, and long-term social impacts.

- **January 30, 2002**. This small group meeting was attended by the Carbon County Commissioners, private landowners, MDT, and CH2M HILL. The purpose of the meeting was to present the project alternatives to the Commissioners and gain their support. The following issues were discussed: project alternatives to date, the project schedule, the NEPA process, typical sections, and the comparison matrix.
- **October 17, 2002**. The purpose of this small group meeting, held from 4 to 7 p.m., was to gain feedback from the landowners affected by the new alignment portions of Alternative 5A and Alternative 5B (preferred). The following landowners attended the meeting: Ray, Sharon, and Doug Kramer; Audrey Waddell; Jim Grewell; Mona Nutting; Kathy Wood; and Bill Hanna.

  During the meeting, the following issues were discussed: Alternative 5A and Alternative 5B (preferred); moving Alternative 5B (preferred) further south; intersections and further adjustments; the project schedule; irrigation; stock movement; access; and, especially, right-of-way acquisition.

  With the exception of Bill Hanna (who had previously received a map), the landowners who attended requested small versions of the maps presented at the meeting. At the end of the meeting, a large color rollout map was given to the Kramers. Black-and-white 11-in x 17-in maps were mailed to the other landowners. Two written comments were received at the meeting.

7.5.4 Other Public Involvement Media

The proposed project has a website at http://projects.ch2m.com/Rockvale. On this website, people can view project information as it becomes available, find out about upcoming scoping meetings, browse project documents as they are released to the public, or contact project sponsors and staff to comment or ask questions.

7.6 Future Public Involvement and Information Activities

This section provides information about:

- Notice of availability of Draft Environmental Impact Statement
- Public hearing
- Draft EIS availability

7.6.1 Notice of Availability of Draft Environmental Impact Statement

The notice announcing the availability of the Draft EIS will indicate the date, place, and time of a public hearing and where to forward comments and questions regarding the proposed project.

7.6.2 Public Hearing

The location of a public hearing on the Draft EIS will be announced in the *Billings Gazette* and posted on the project's website (http://projects.ch2m.com/Rockvale). Public hearing notices will also be sent to those on the mailing list.

7.6.3 Draft EIS Availability

Copies of this Draft EIS will be available at the following locations for public review:

Billings:	MDT Billings District Office 424 Morey
	Parmly Billings Library 510 N. Broadway
	Yellowstone County Commissioners Office 217 North 27th Street, Room 403
Helena:	Montana State Library 1515 E. 6th Ave.
Joliet:	Joliet Community Library 300 N. Park Street
Laurel:	Laurel Public Library 720 W. Third Street
Red Lodge:	Carbon County Commissioners' Office 17 W. Eleventh St.
	Carnegie Library 3 West 8th

In addition, a copy of the Draft EIS is available on the MDT website at http://www.mdt.mt.gov/pubinvolve/eis_ea.shtml.

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PART II: SECTION 106 Determination of Effect

RECEIVED MAY 09 2003 ENVIRONMENTAL

Montana Department of Transportation
2701 Prospect Avenue
PO Box 201001
Helena MT 59620-1001

David A. Galt, Director
Judy Martz, Governor

2003050602

May 5, 2003

STAN
MDT
Rockvale-Laurel
24CB1764
TESTING

BY:

Mark Baumler, Ph.D.
State Historic Preservation Office
1410 8th Avenue
P O Box 201202
Helena, MT 59620-1202

Subject: NH 4-1(21)43
Rockvale – Laurel
Control No. 4070

Enclosed is the archaeological testing report and CRABS for a tipi ring site (24CB1764). Based on the negative results, we have determined that the site is ineligible for the NRHP. We request your concurrence.

CONCUR
MONTANA SHPO
5/8/2003 SIGNED

If you have any questions, please contact me at 444-6258.

Jon Axline

Jon Axline, Historian
Environmental Services

Enclosures

cc: Bruce Barrett, Billings District Administrator
Carl Peil, P.E., Preconstruction Bureau
Gordon Stockstad, Resources Section

serving you with pride

Montana Department of Transportation
Environmental Services Bureau
2701 Prospect Avenue PO Box 201001
Helena, MT 59620-1001

TELEPHONE: 406-444-7228 FAX: 406-444-7245

FAX TRANSMISSION

TO: JONATHAN MATHEWS

OF: CH2M Hill

FAX #: 208-345-5315

FROM: Jon Axline TELEPHONE: 406-444-6258

DATE: 8/11/03

SUBJECT: Rockvale - LAUREL

MESSAGE:

S:Admin:Fax Cover

2003041512

Montana Department of Transportation
serving you with pride
2701 Prospect Avenue
PO Box 201001
Helena MT 59620-1001

David A. Galt, Director
Judy Martz, Governor

• Josef
• MDT
• Rockvale to Laurel
Effect finding

April 14, 2003

RECEIVED
APR 15 2003
BY:

Mark Baumler, Ph.D.
State Historic Preservation Office
1410 8th Avenue
P O Box 201202
Helena, MT 59620-1202

Subject: NH 4-1(21)43
Rockvale – Laurel
Control No. 4070

CONCUR
MONTANA SHPO
DATE [illegible] 03 SIGNED [signature]

Enclosed is the Determination of Effect for the above project in Carbon and Yellowstone counties. The project is currently being treated under an Environmental Impact Statement. Several alternative alignments have been identified, but Alternative 5B is currently considered the Preferred Alternative. Three historic sites are located within the Area of Potential Effect for that Alternative. They are: the Free Silver Canal (24CB1287), the Rocky Fork Branch of the Northern Pacific Railroad (24CB1283/24YL1533), and the Nutting Farmstead (24CB1642). We have determined that the proposed project would have **No Effect** to the three historic sites for the reasons specified in the document. We request your concurrence.

An untested archaeological site (24CB1764) is located in proximity to the preferred alternative. Testing was recently conducted on the site to determine its National Register eligibility. The testing report will be forwarded to your office when it becomes available. If the site is NRHP eligible, then we will submit an amended Determination of Effect to your office for review and comment. If there are any changes in the preferred alternative as a result of public comments or other reasons, then we will also amend the Determination of Effect.

If you have any questions, please contact me at 444-6258.

Jon Axline

Jon Axline, Historian
Environmental Services

Enclosure

cc: Bruce Barrett, Billings District Administrator
Carl Peil, P.E., Preconstruction Bureau
Gordon Stockstad, Resources Section

DETERMINATION OF EFFECT

NH 4-1(21)43
Rockvale - Laurel
Control No. 4070

Introduction

The Montana Department of Transportation (MDT) intends to reconstruct about nine miles of U.S. Highway 310 in Yellowstone and Carbon counties, Montana. The project begins about Milepost 42 at the junction of U. S. Highway 212 and 310 south of the community of Rockvale in Carbon County. It proceeds northeasterly about nine miles to Milepost 53 just south of the City of Laurel in Yellowstone County. The existing roadway was constructed under three projects in 1937, 1949, and 1968. There were safety improvement projects in 1971, 1983 and 2001. The existing roadway's driving surface is 32-feet. Figure 1 shows the project area.

The Rockvale – Laurel project currently includes eight alternative alignments, of which Alternative 5B is the current preferred alternative. It follows the existing alignment from Rockvale north to Milepost 43.7 where it leaves U.S. 310 and turns northwesterly for about one mile and then turns northeast where it joins with Alternative 1 at Farewell Creek Road about 0.8 miles west of the community of Silesia. It follows Alternative one for less than a mile before joining Alternative 5A. It then turns northeasterly for about 7 miles before joining the existing U.S. Highway 310 at about MP 52.5.

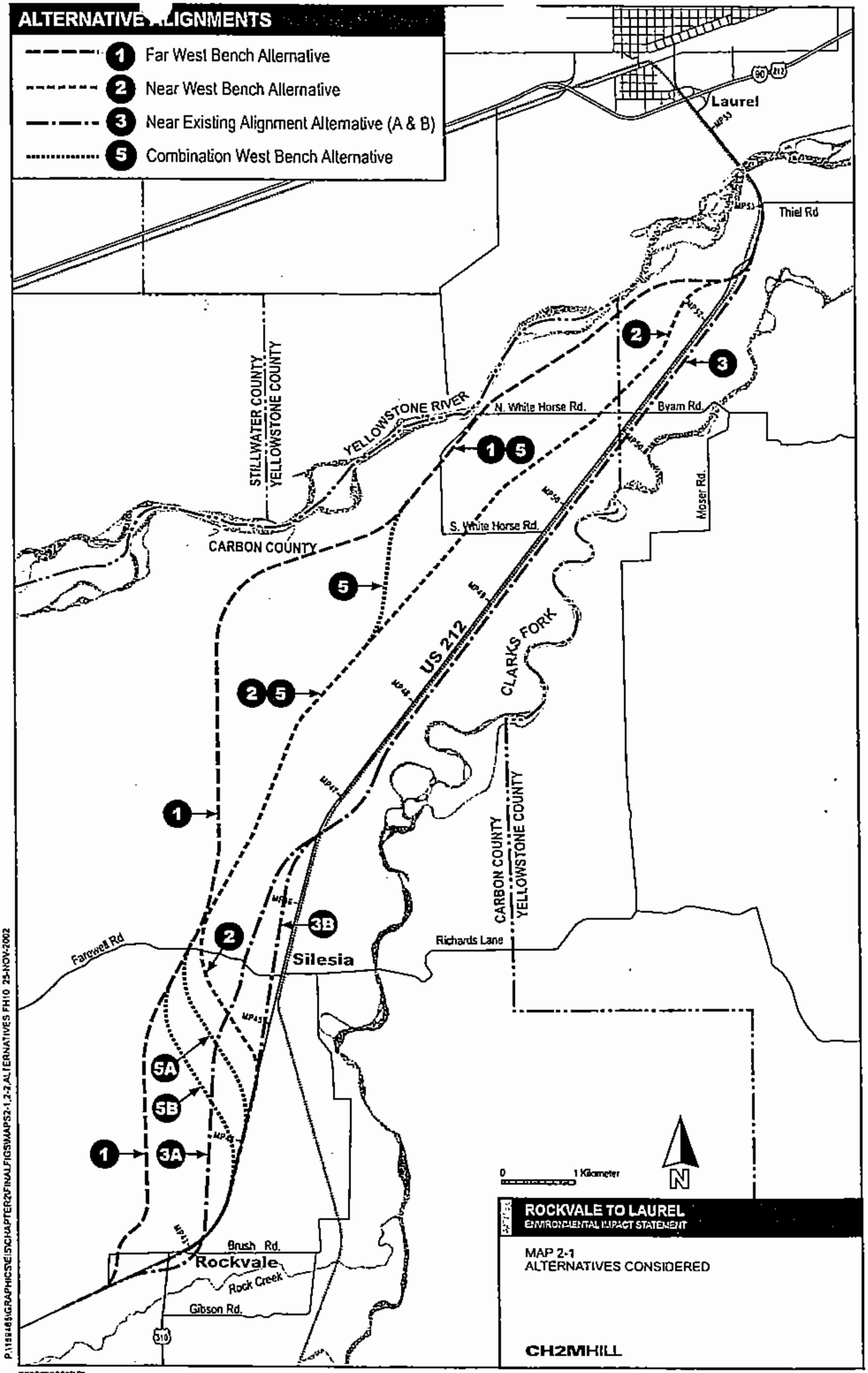
It is the intent of the project to construct and widen the roadway to a 64-foot paved surface, including four 12-foot driving lanes and two 8-foot paved shoulders. Other options being considered for this proposed project include an 64-foot paved surface facility with a 16.4-foot paved median and a 72-foot paved surface with a 28-foot unpaved median. Additional Right-of-Way (R/W) and/or construction permits would be required for this project.

Significant Cultural Resources

Cultural resource surveys of the project area were conducted in 2001 and 2002. The MDT and the Montana State Historic Preservation Office (SHPO) concurred in the National Register of Historic Places (NRHP) eligibility of three historic sites. They are: the Free Silver Canal (24CB1287), the Rocky Fork Branch of the Northern Pacific Railroad (24CB1283/24YL1533) and the Nutting Farmstead (24CB1642).

The Free Silver Canal was constructed in 1893 and irrigates about 900 acres of farmland in Carbon and Yellowstone counties. Because of its significance to the agricultural development of the area, it is eligible for the NRHP under Criterion A.

The Rocky Fork Branch of the Northern Pacific Railroad was built in 1889 by a consortium of western Montana businessmen interested in developing coal deposits on upper Rock Creek for the use of the railroad. Because of the railroad's significance to the mining and agricultural development of Carbon County and its significance to the development the communities of Red Lodge, Fox, Roberts, Joliet and Boyd, it is eligible for the NRHP under Criterion A.


ALTERNATIVE ALIGNMENTS
1 Far West Bench Alternative
2 Near West Bench Alternative
3 Near Existing Alignment Alternative (A & B)
5 Combination West Bench Alternative
Laurel
Thiel Rd
STILLWATER COUNTY
YELLOWSTONE COUNTY
YELLOWSTONE RIVER
N. White Horse Rd.
Byam Rd.
S. White Horse Rd.
Moser Rd.
CARBON COUNTY
US 212
CLARKS FORK
CARBON COUNTY
YELLOWSTONE COUNTY
Farewell Rd
Richards Lane
Silesia
3B
5A
5B
3A
Brush Rd.
Rockvale
Rock Creek
Gibson Rd.
0
1 Kilometer
N
ROCKVALE TO LAUREL
ENVIRONMENTAL IMPACT STATEMENT
MAP 2-1
ALTERNATIVES CONSIDERED
CH2MHILL

The Nutting Farmstead consists of two residences and eleven outbuildings. The site was first developed in the early 1900s by Oliver Chilcott and later purchased William Nutting. It has been in the Nutting family since 1919. Because of the site's high degree of integrity, it is eligible for the NRHP under Criterion C.

Project Impact

The Rockvale – Laurel project is being handled under an Environmental Impact Statement. At this stage, no preliminary plans are available. Conceptually, however, it is known what the effects of the proposed project would be on the three historic sites. That information is included below.

It is the intent of the proposed Rockvale – Laurel project to construct a crossing of the Free Silver Canal (24CB1287) under preferred Alternative 5B. The crossing would consist of a concrete box culvert that closely matches the existing width of the canal. There would be no change in the alignment of the canal and its existing function would be perpetuated. Either R/W or an easement would be required to construct the crossing.

The proposed new alignment would necessitate the construction of a new roadway overpass over the Rocky Fork Branch of the Northern Pacific Railroad (24CB1283/24YL1533). The proposed new structure would be located just to the south of the existing railroad overpass located at about Milepost 52.5 on U.S. 310 (it was constructed in the late 1950s). The proposed overpass would have a vertical clearance 23-feet and a horizontal clearance of 25.3-feet. While there would be some R/W or an easement required to place the piers supporting overpass, there would be no change in the alignment of the railroad and its current function would be maintained.

At the Nutting Farmstead (24CB1642) the proposed centerline would be shifted away from the property. The existing edge of pavement is 361-feet from the property, while the centerline is 373-feet from the farmstead. There would be some R/W take from the property, however. The proposed R/W boundary would be 262± feet from the Nutting Farmstead.

Project Effect

There would be **No Effect** to the NRHP-eligible Free Silver Canal (24CB1287) as a result of the proposed MDT project. Under Alternative 5B, the proposed roadway would cross the existing canal. A concrete box culvert would be installed to facilitate the crossing. There would be no change in the alignment of the ditch and its existing use would be perpetuated. There would be no significance diminution of the characteristics that make it eligible for the NRHP. Its significance under Criterion A would be perpetuated as its original function would be maintained. The site would not be neglected, abandoned or bypassed as a result of the proposed project. The setting would not be significantly altered by the construction of the new roadway. The area surrounding the ditch has been slowly encroached upon by residential development expanding south from the City of Laurel.

There would be **No Effect** to the Rocky Fork Branch of the Northern Pacific Railroad (24CB1283/24YL1533) as a result of the proposed project. The existing alignment and function of the railroad would be perpetuated. Some new R/W would be required to accommodate the

substructure of the proposed overpass. The overpass piers would, however, not encroach on the railroad grade or require the removal or relocation of any appurtenances associated with the operation of the line. There would be a change in the setting of the site with the construction of a new overpass. The Rocky Fork's historical significance to the history and development of the Rock Creek Valley and Carbon County would remain intact as the function of the railroad would be maintained after the new overpass is constructed.

There would be **No Effect** to the NRHP-eligible Nutting Farmstead (24CB1642) as a result of the proposed project. The proposed centerline would be shifted away from the property. The proposed pavement edge would be located further away from the site than it is now (361-feet). Although there would be some R/W acquired from the site, the proposed boundary would be 262± feet from the farmstead. There would be no diminishment in the characteristics that make the site eligible for the NRHP as a result of the project. All of the buildings and structures associated with the site would remain intact and untouched by the project. Its current function as a working farmstead would be perpetuated and remain unchanged as a result to the proposed project. There would be no neglect, sale or lease of the property also as a result of the project. Because of the existing and proposed distance of the property from the existing/proposed roadway, there would be no substantial change in the setting of the Nutting Farmstead.

Appendixes

A: Intersection Alternatives
B: Species Information
C: Farmland Conversion Impact Rating for Corridor Type Projects
D: Noise Figures
E: Clean Water Act Section 404(b)(1) Evaluation
F: Glossary
G: Coordination Letters

Appendix A: Intersection Alternatives

TABLE A-1
Key to Intersection Alternatives Figures

Figure No.	Description	Alt. 1	Alt. 2	Alt. 3A	Alt. 3B	Alt. 5A	Alt. 5B (Preferred)
A-1	212/310	X					
A-2	212/Farewell Road	X				X	X
A-3	212/White Horse Bench Road	X				X	X
A-4	212/North White Horse Bench Road	X				X	X
A-5a	212/PTW, Option 1	X				X	X
A-5b	212/PTW, Option 2	X				X	X
A-5c	212/PTW, Option 3	X				X	X
A-5d	212/PTW, Option 4	X				X	X
A-6	212/310		X		X	X	X
A-7	212/PTW		X				
A-8	212/Farewell Road		X				
A-9	212/South White Horse Bench Road		X				
A-10	212/North White Horse Bench Road		X				
A-11	212/PTW		X				
A-12	212/310			X			
A-13	212/PTW South			X			
A-14	212/Farewell Road			X			
A-15	212/PTW North			X	X		
A-16	212/Farewell Road				X		
A-17	212/PTW South					X	
A-18	212/PTW South						X
A-19	Railroad Crossing RP 47.9			X	X		
A-20	Railroad Crossing RP 48.9			X	X		
A-21	Railroad Crossing RP 50.2			X	X		
A-22	Railroad Crossing Byam Road			X	X		

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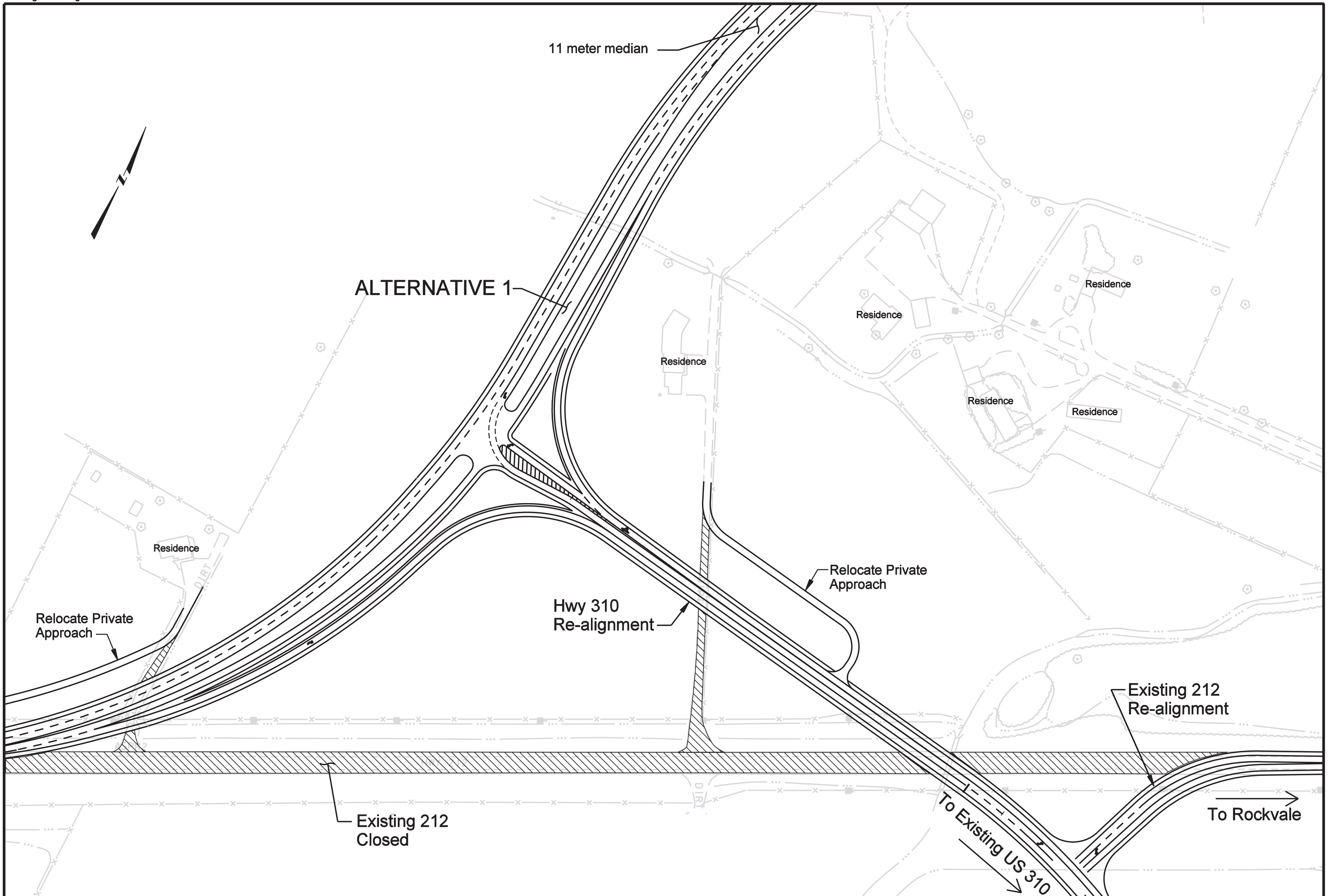


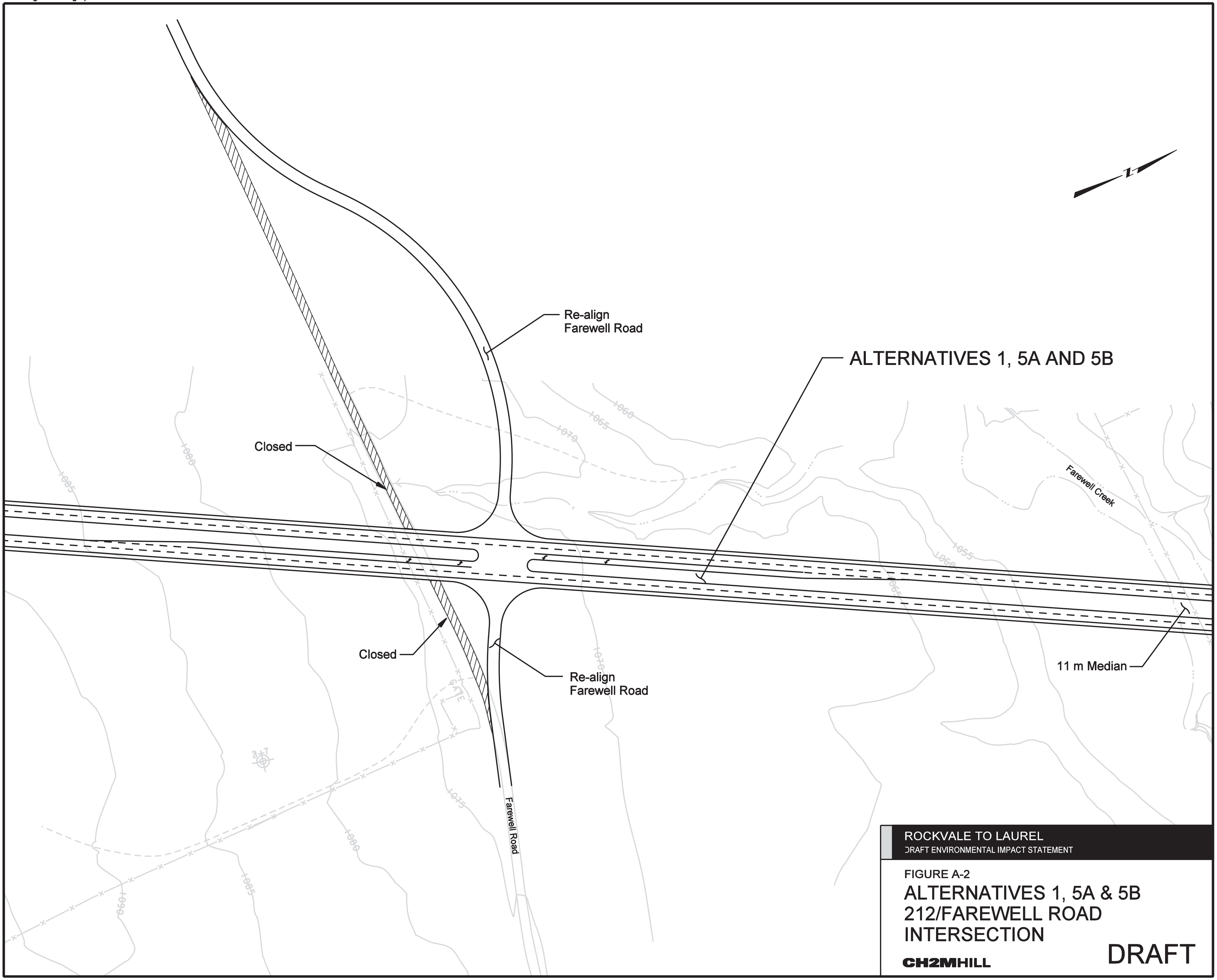
ROCKVALE TO LAUREL
DRAFT ENVIRONMENTAL IMPACT STATEMENT

FIGURE A-1
ALTERNATIVE 1
212/310 INTERSECTION

CH2MHILL

DRAFT

Figure A-2.dgn/pdf 26-JUN-2003



ROCKVALE TO LAUREL
DRAFT ENVIRONMENTAL IMPACT STATEMENT

FIGURE A-2
ALTERNATIVES 1, 5A & 5B
212/FAREWELL ROAD
INTERSECTION

CH2MHILL

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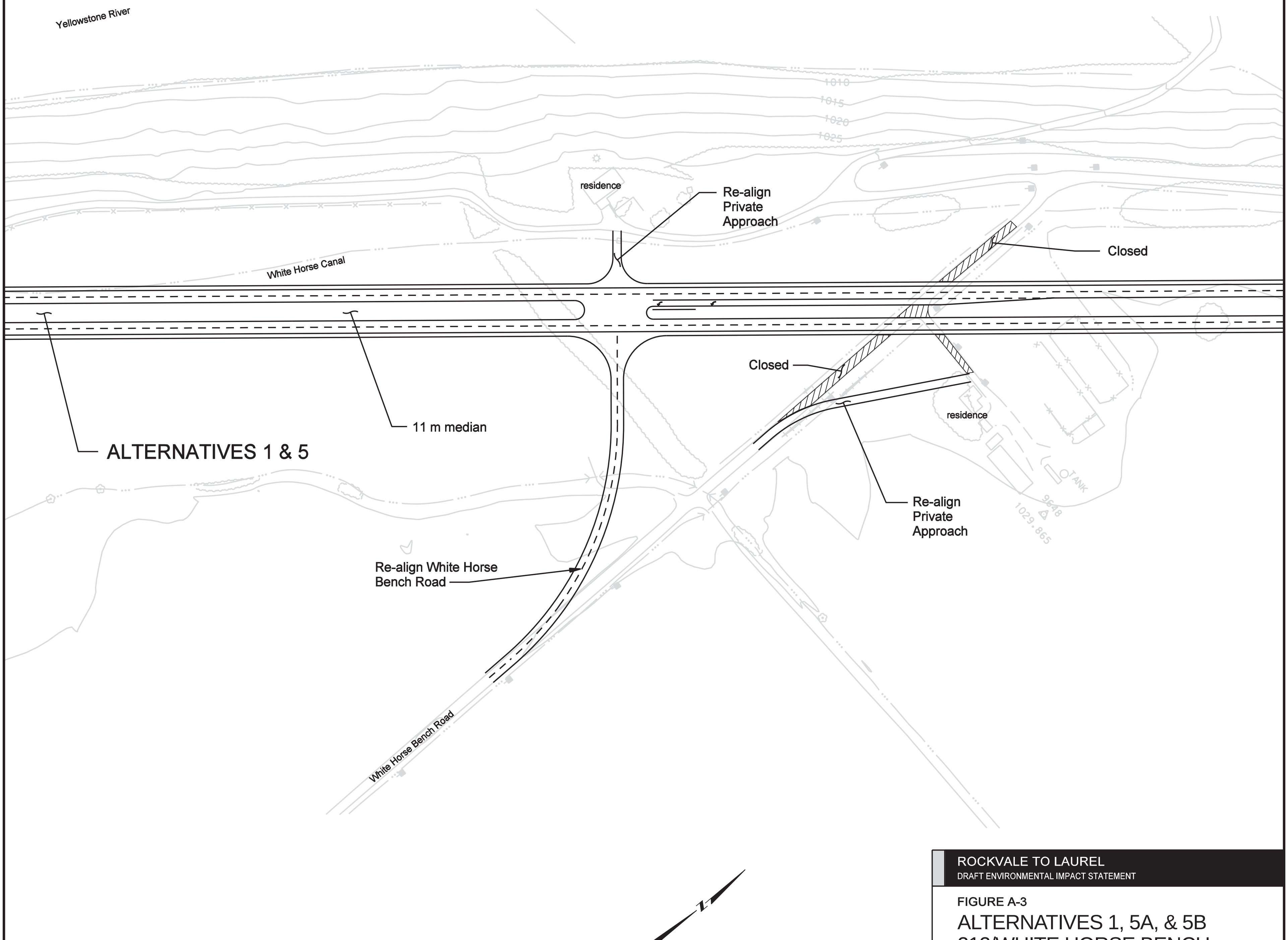

ROCKVALE TO LAUREL
DRAFT ENVIRONMENTAL IMPACT STATEMENT

FIGURE A-3
ALTERNATIVES 1, 5A, & 5B
212/WHITE HORSE BENCH
ROAD INTERSECTION

CH2MHILL

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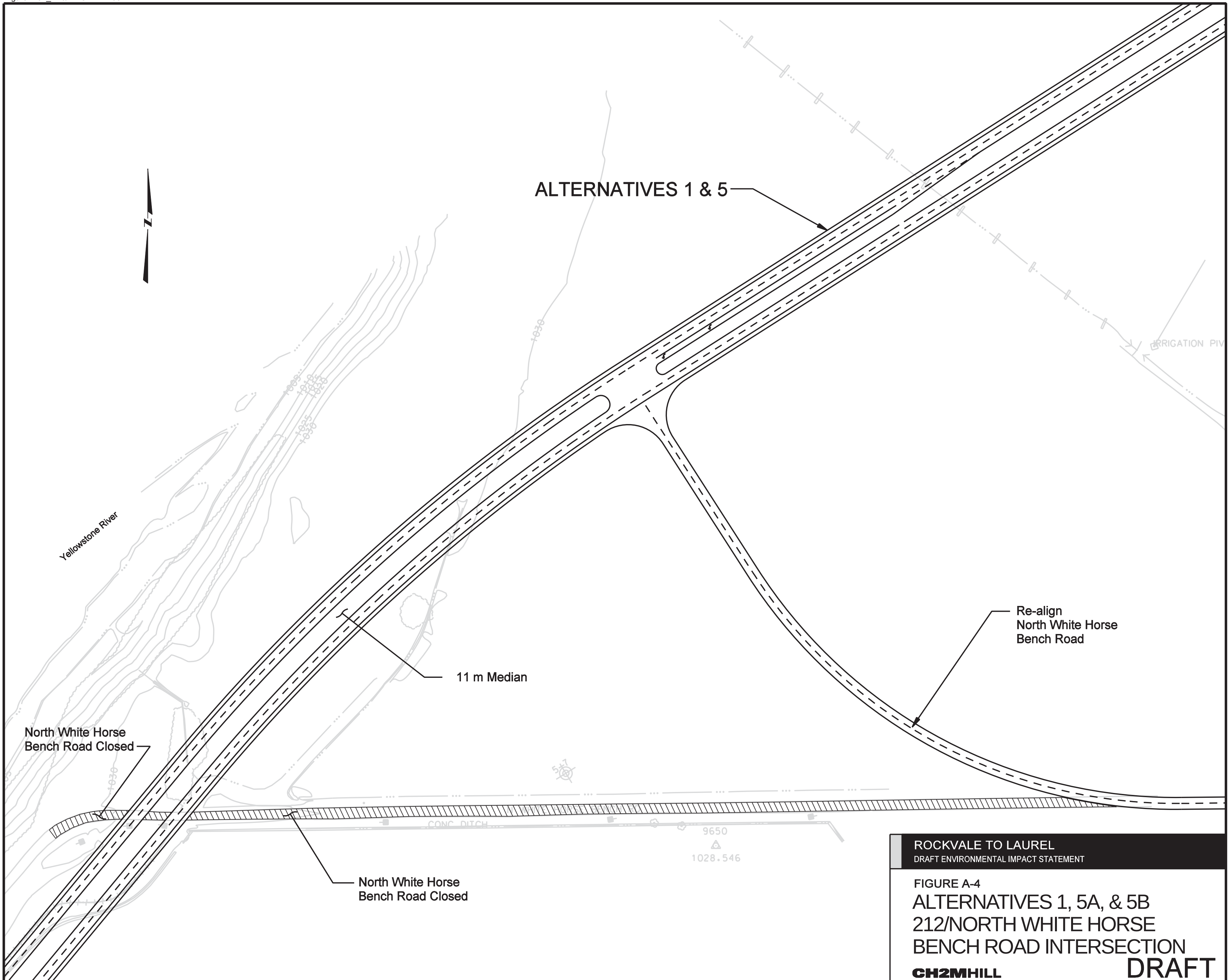

ROCKVALE TO LAUREL

DRAFT ENVIRONMENTAL IMPACT STATEMENT

FIGURE A-4

ALTERNATIVES 1, 5A, & 5B
212/NORTH WHITE HORSE
BENCH ROAD INTERSECTION

CH2MHILL

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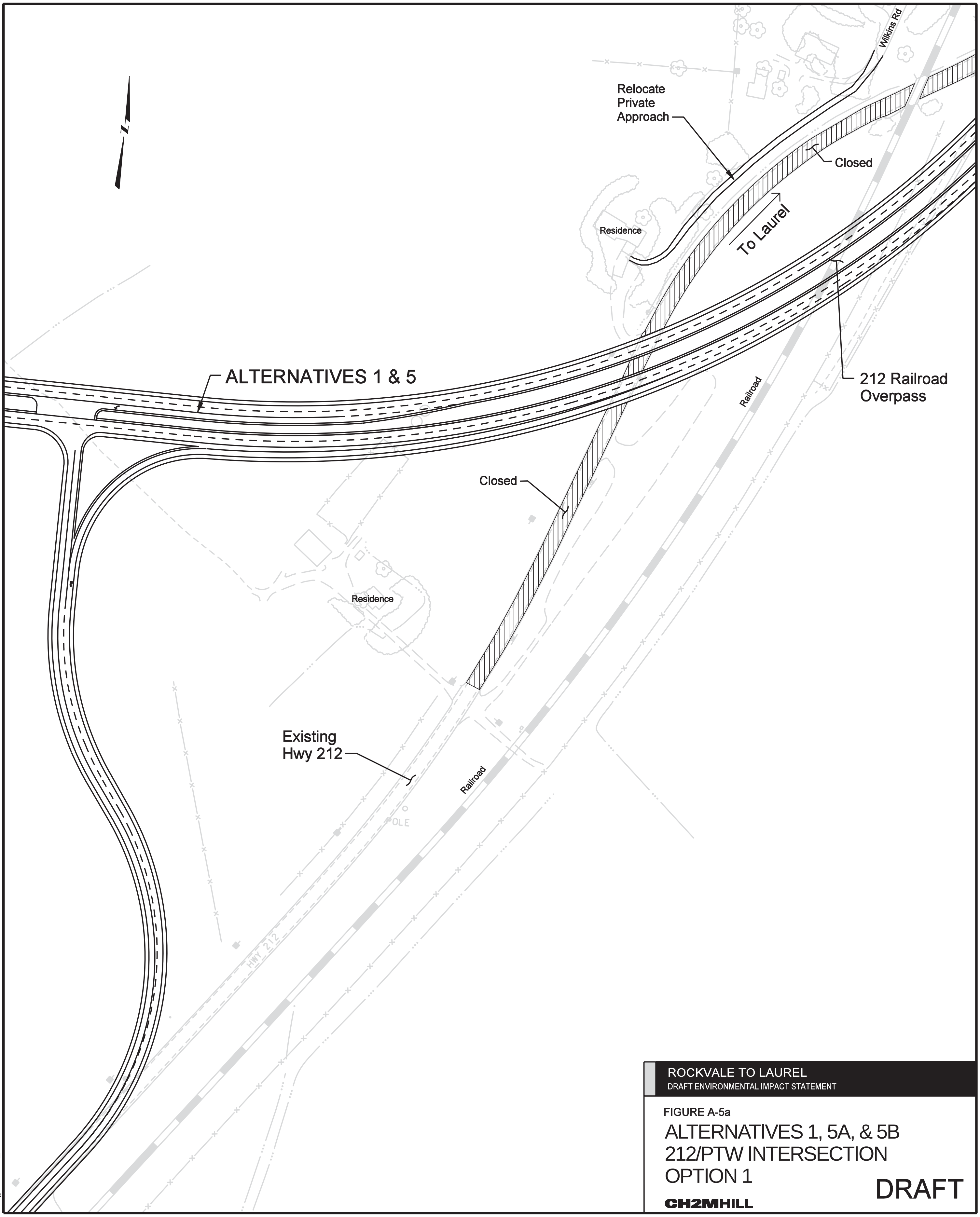

ROCKVALE TO LAUREL
DRAFT ENVIRONMENTAL IMPACT STATEMENT

FIGURE A-5a

ALTERNATIVES 1, 5A, & 5B
212/PTW INTERSECTION
OPTION 1

CH2MHILL

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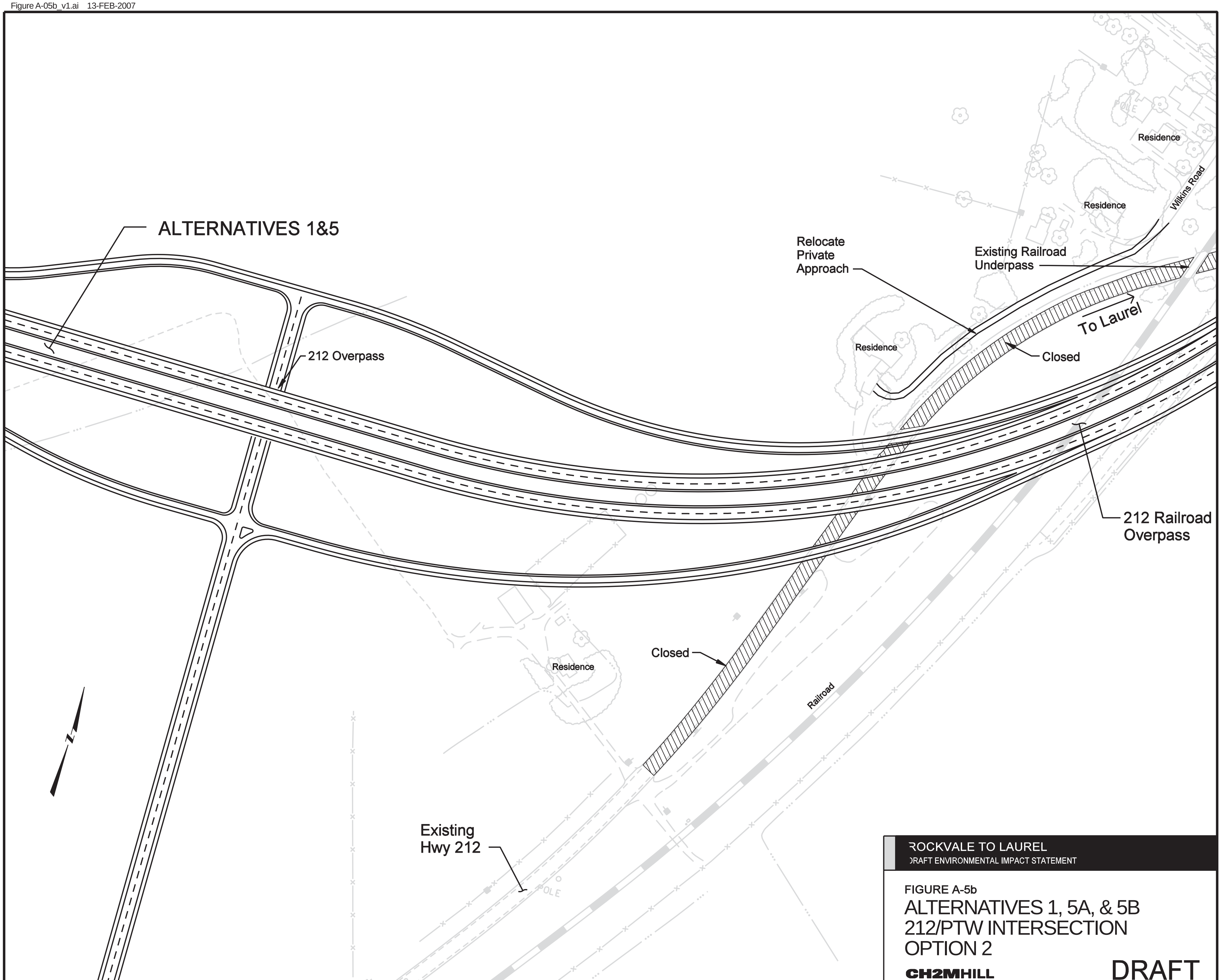
Figure A-05a_v1.ai 13-FEB-2007

Figure A-05b_v1.ai 13-FEB-2007



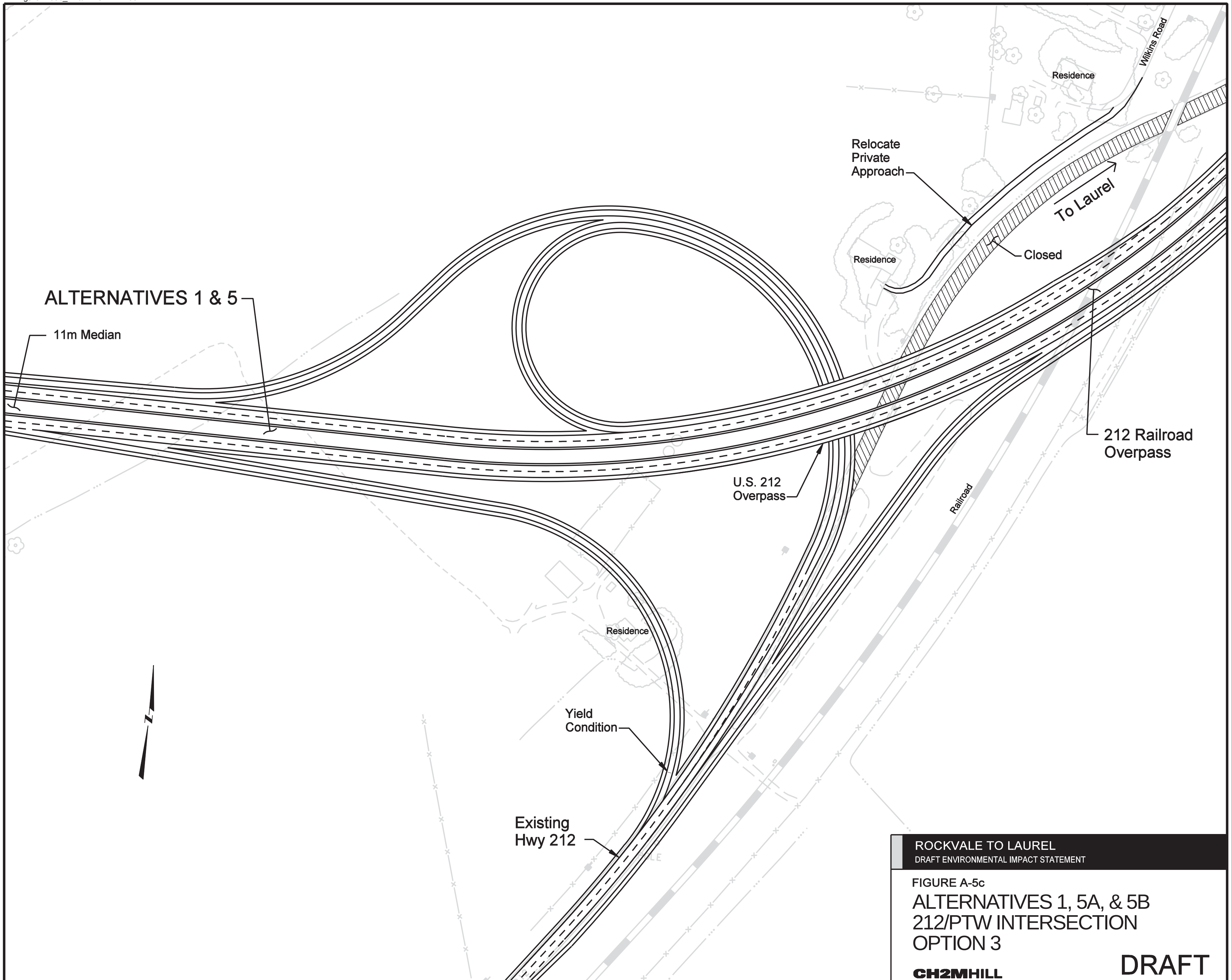
ROCKVALE TO LAUREL
DRAFT ENVIRONMENTAL IMPACT STATEMENT

FIGURE A-5b
ALTERNATIVES 1, 5A, & 5B
212/PTW INTERSECTION
OPTION 2

CH2MHILL

DRAFT

Figure A-05c_v1.ai 13-FEB-2007



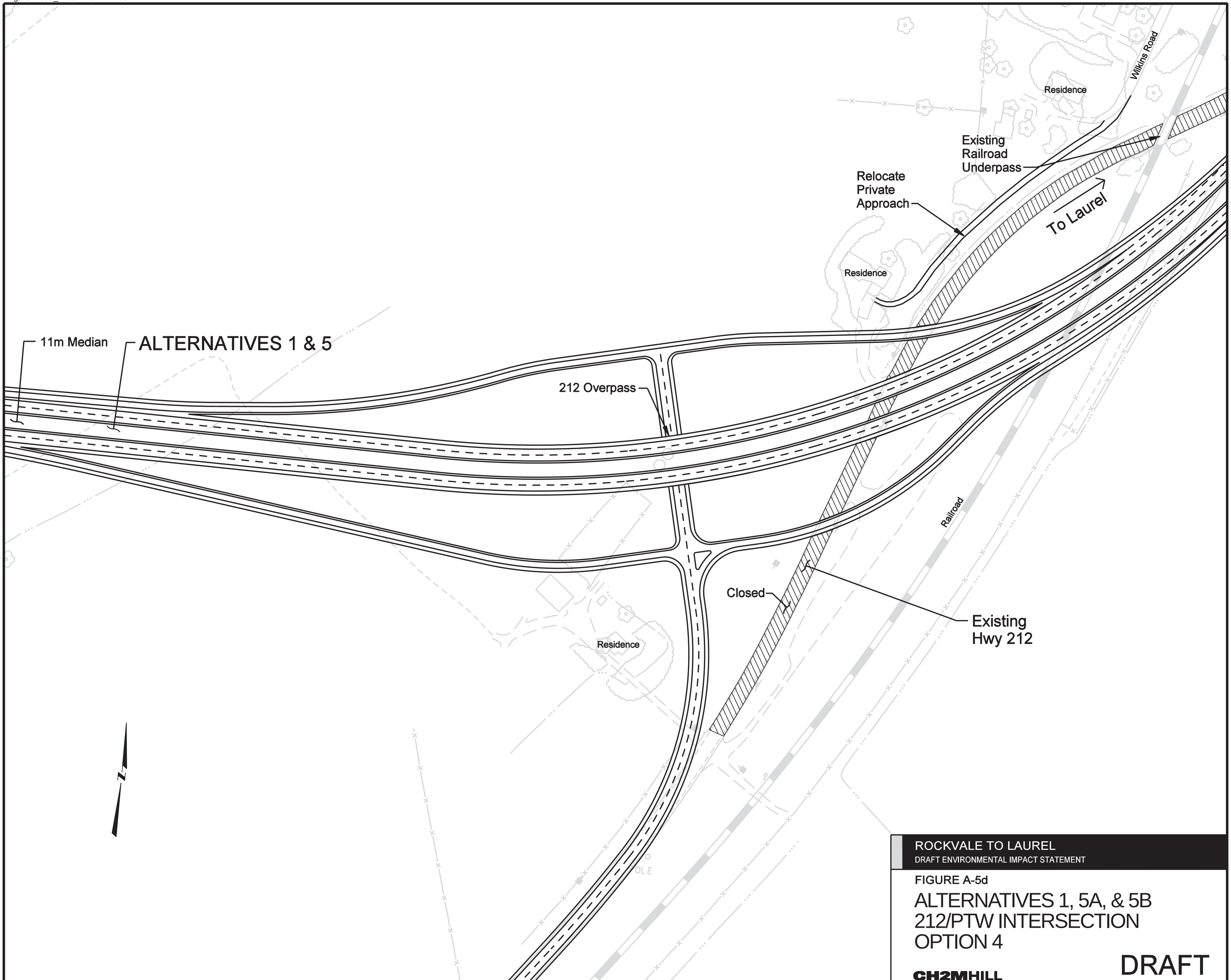
ROCKVALE TO LAUREL
DRAFT ENVIRONMENTAL IMPACT STATEMENT

FIGURE A-5c
ALTERNATIVES 1, 5A, & 5B
212/PTW INTERSECTION
OPTION 3

CH2MHILL

DRAFT

Figure A-05d_v1.ai 13-FEB-2007



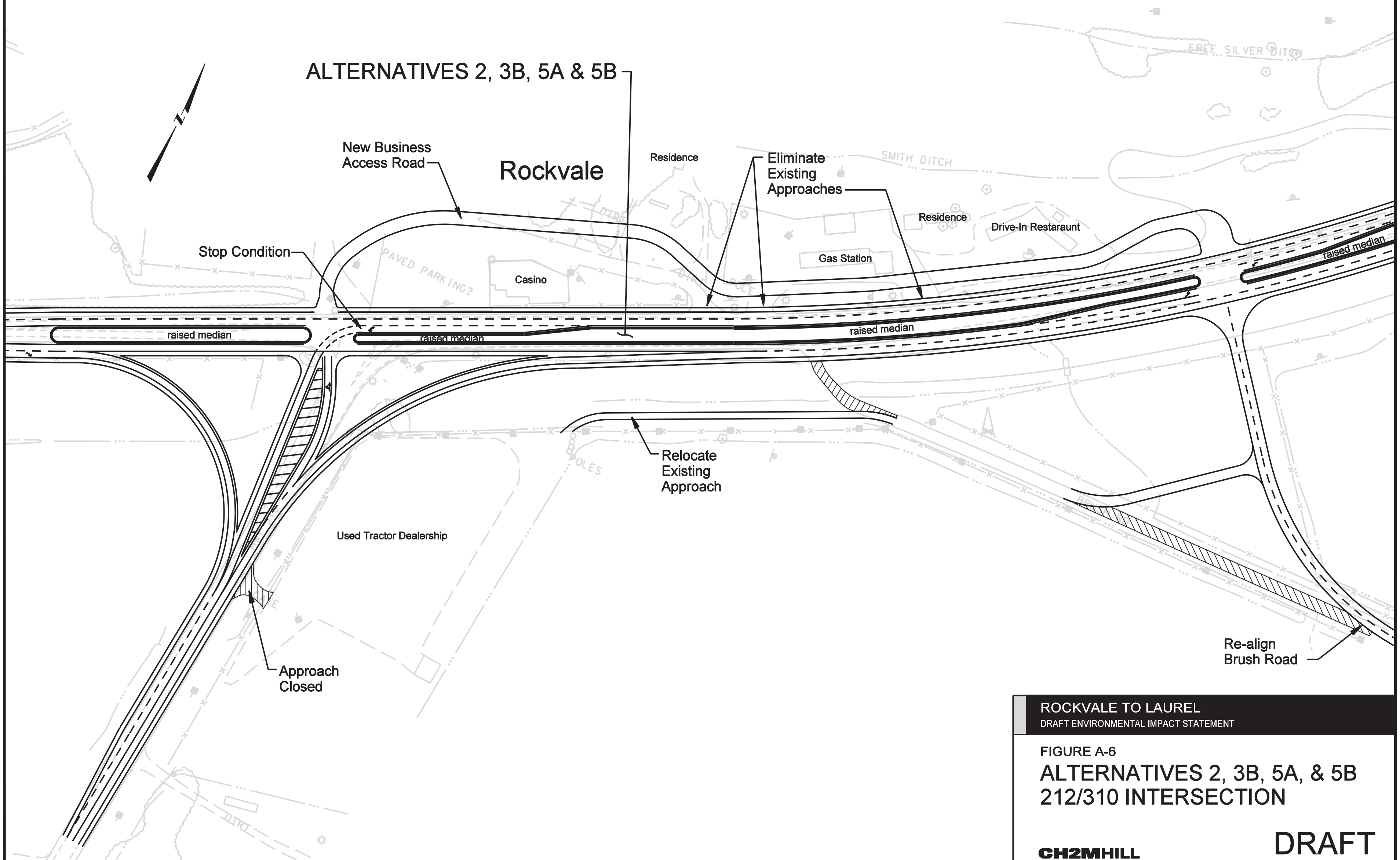
ROCKVALE TO LAUREL
DRAFT ENVIRONMENTAL IMPACT STATEMENT

FIGURE A-5d
ALTERNATIVES 1, 5A, & 5B
212/PTW INTERSECTION
OPTION 4

CH2MHILL

DRAFT

Figure A-6.dgn/pdf 30-JUN-2006



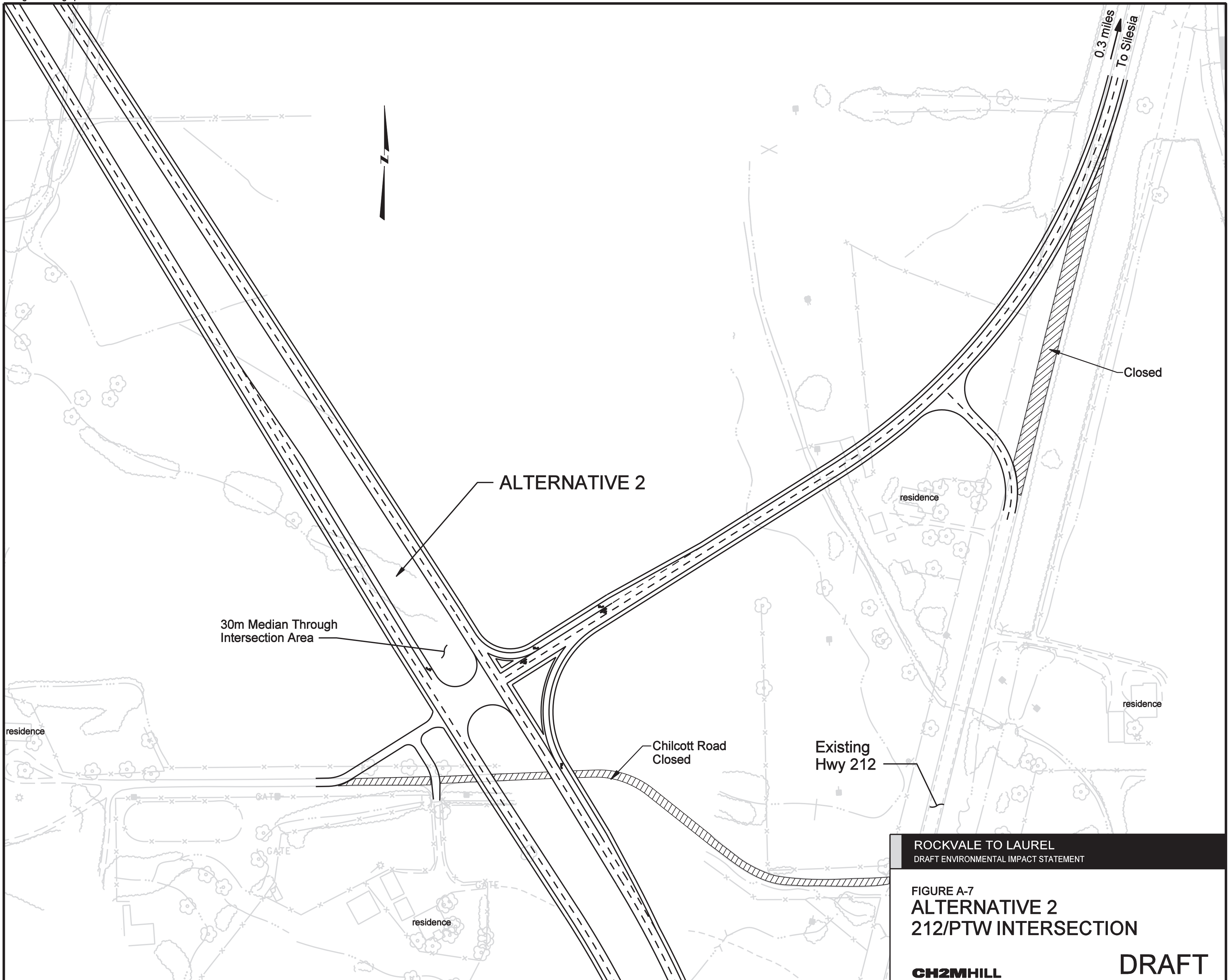
ROCKVALE TO LAUREL
DRAFT ENVIRONMENTAL IMPACT STATEMENT

FIGURE A-6
ALTERNATIVES 2, 3B, 5A, & 5B 212/310 INTERSECTION

CH2MHILL

DRAFT

Figure A-7.dgn/pdf 26-JUN-2003

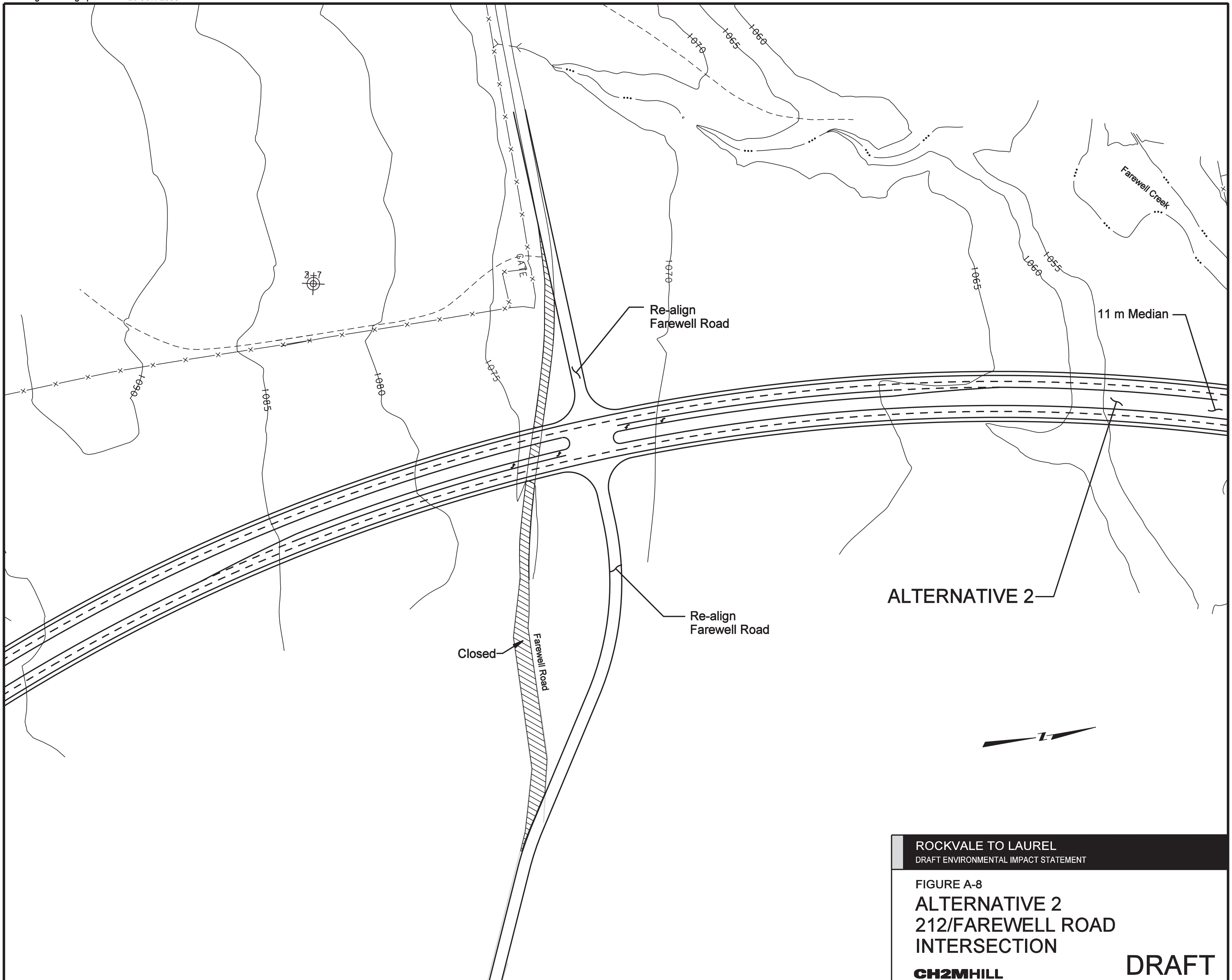


ROCKVALE TO LAUREL
DRAFT ENVIRONMENTAL IMPACT STATEMENT

FIGURE A-7
ALTERNATIVE 2
212/PTW INTERSECTION

CH2MHILL

DRAFT

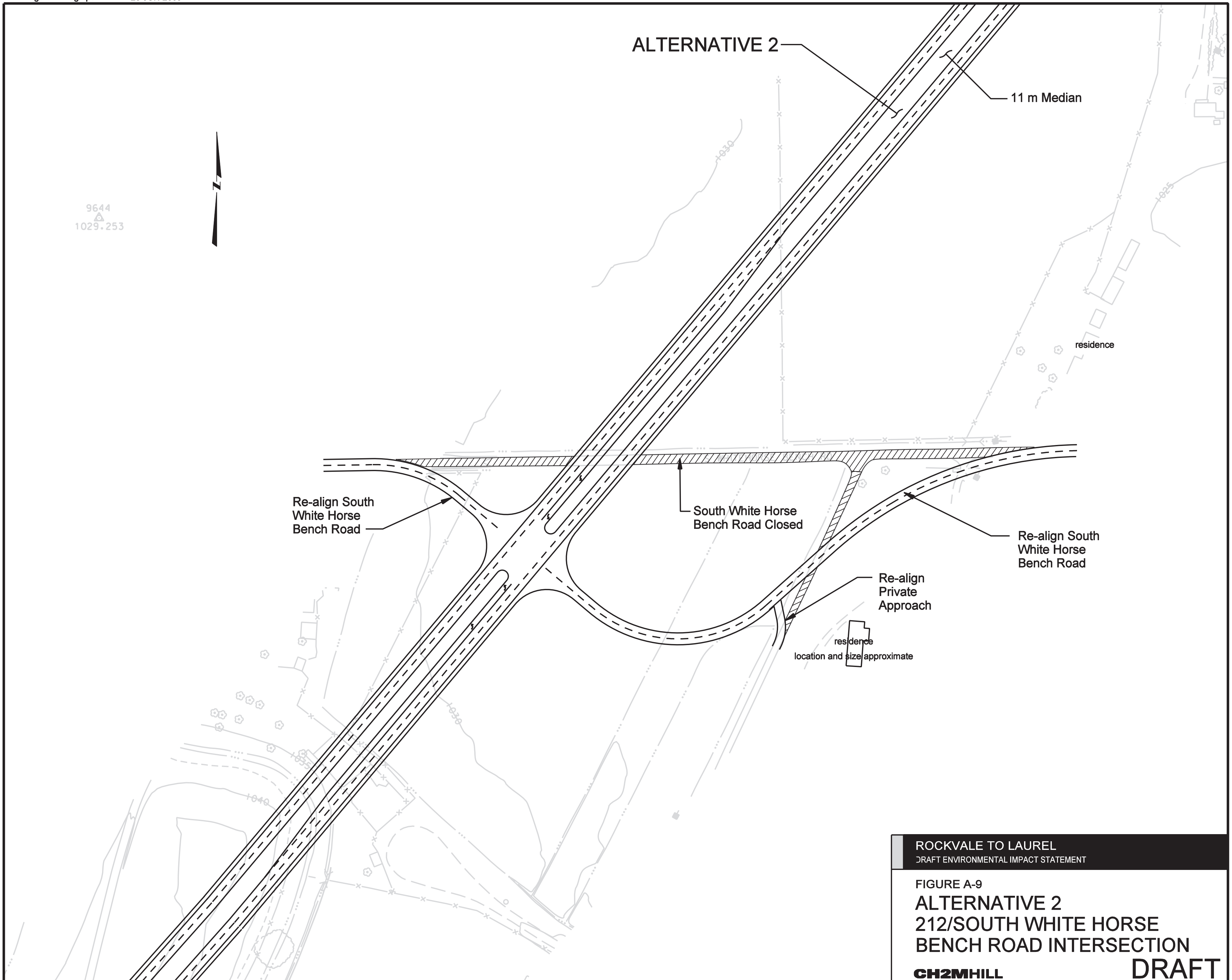


ROCKVALE TO LAUREL
DRAFT ENVIRONMENTAL IMPACT STATEMENT

FIGURE A-8
ALTERNATIVE 2
212/FAREWELL ROAD
INTERSECTION

CH2MHILL

DRAFT



ROCKVALE TO LAUREL

DRAFT ENVIRONMENTAL IMPACT STATEMENT

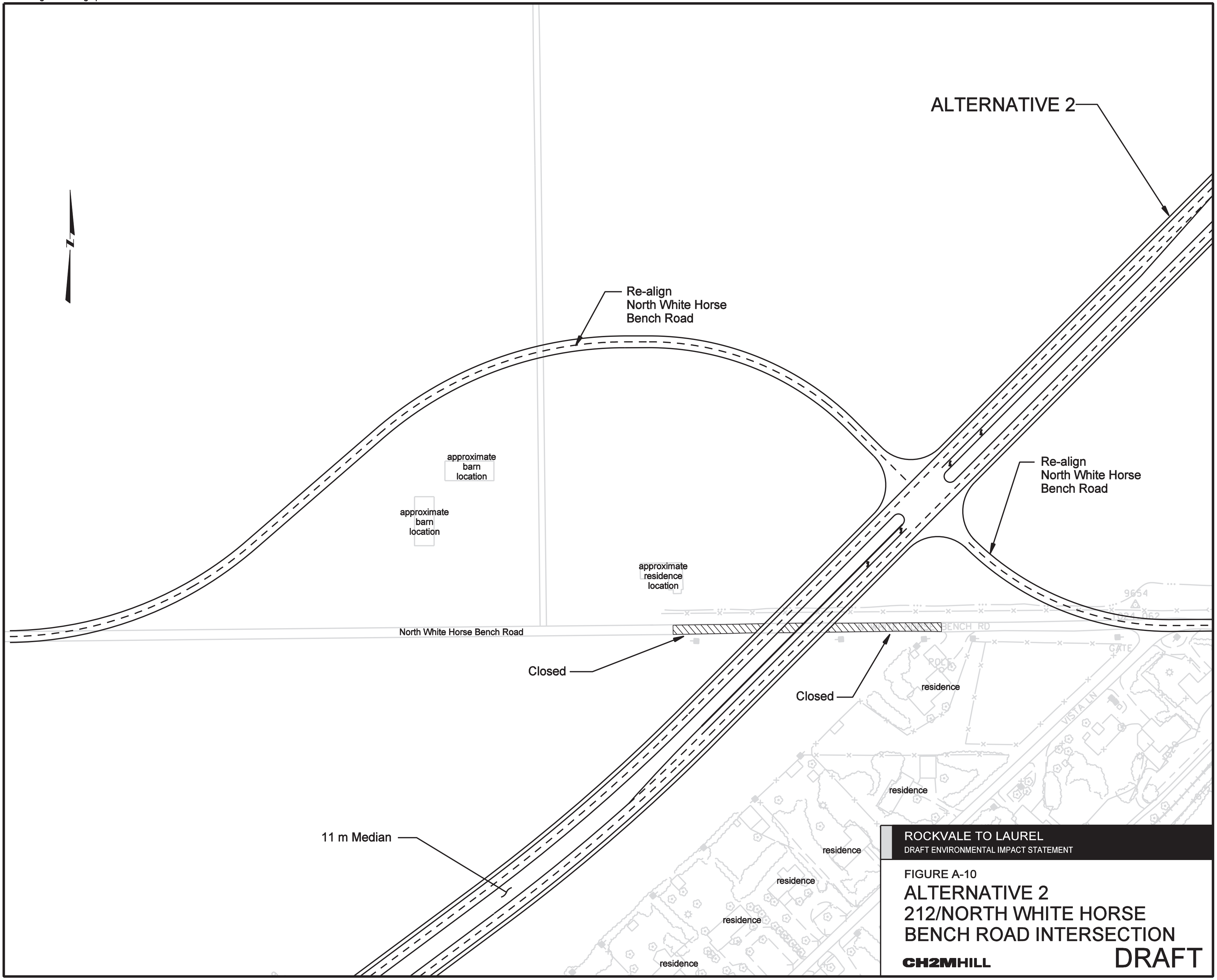
FIGURE A-9

ALTERNATIVE 2
212/SOUTH WHITE HORSE BENCH ROAD INTERSECTION

CH2MHILL

DRAFT

Figure A-10.dgn/pdf 26-JUN-2003

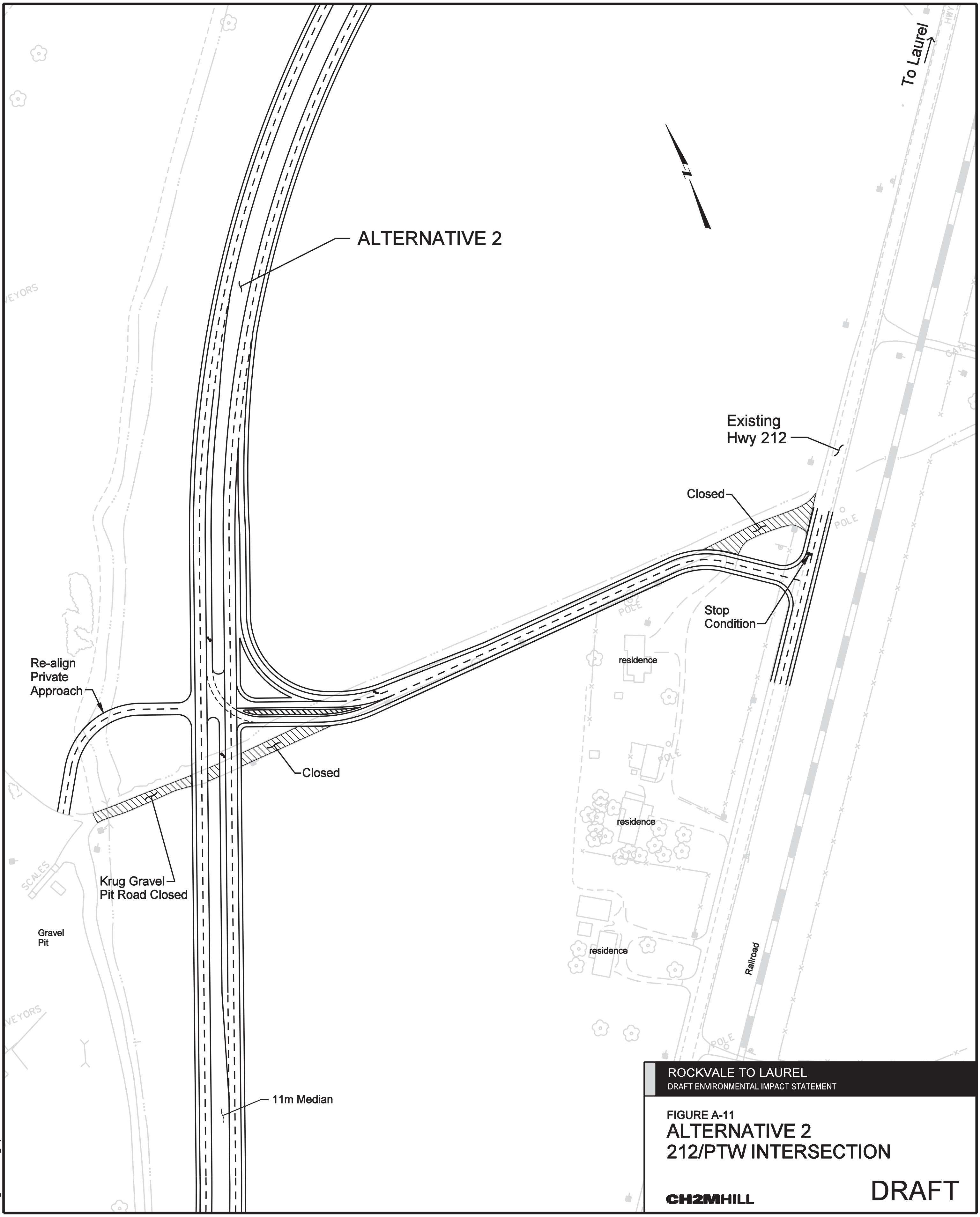


ROCKVALE TO LAUREL
DRAFT ENVIRONMENTAL IMPACT STATEMENT

FIGURE A-10
ALTERNATIVE 2
212/NORTH WHITE HORSE BENCH ROAD INTERSECTION

CH2MHILL

DRAFT



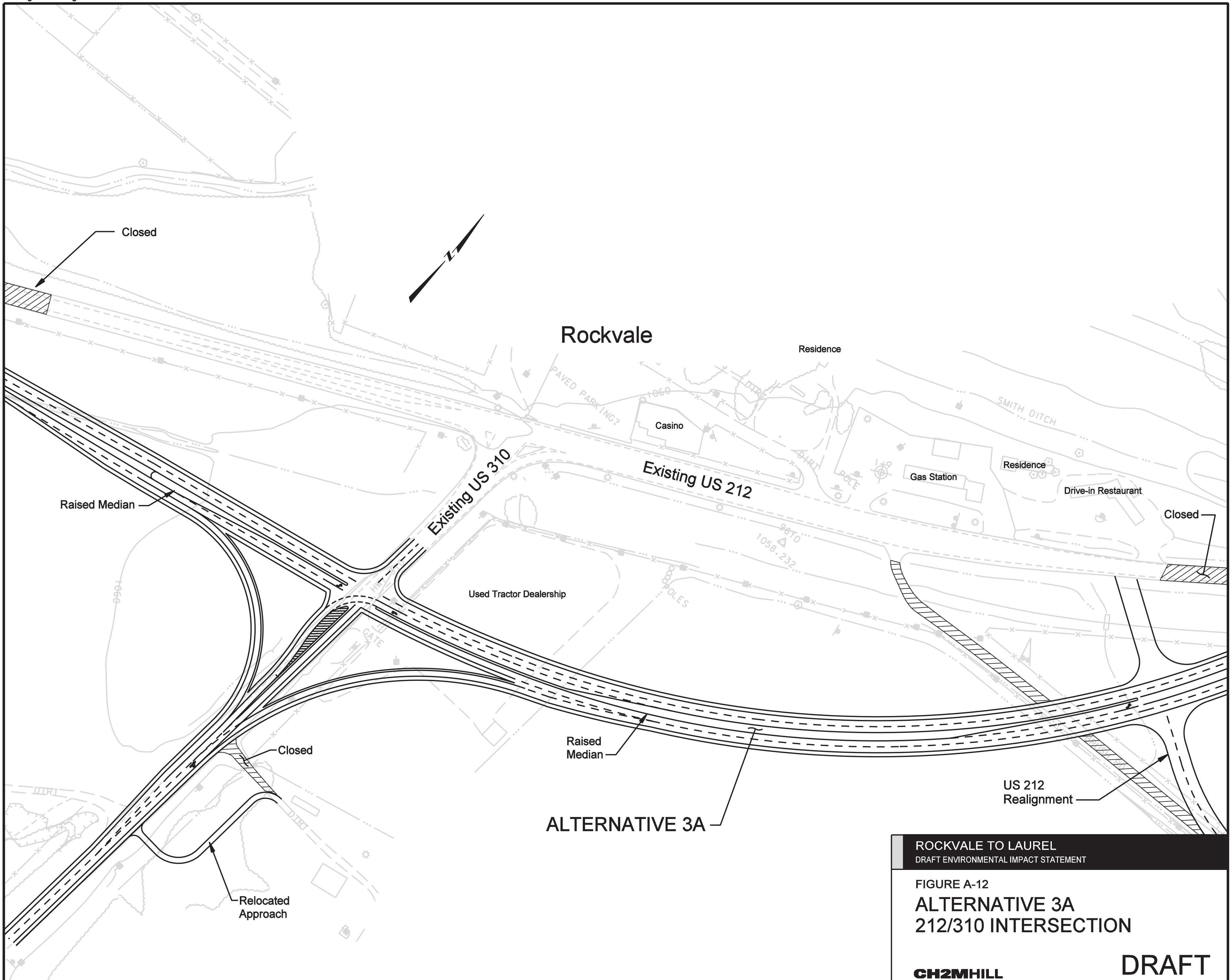
ROCKVALE TO LAUREL
DRAFT ENVIRONMENTAL IMPACT STATEMENT

FIGURE A-11
ALTERNATIVE 2
212/PTW INTERSECTION

CH2MHILL

DRAFT

Figure A-11.dgn/pdf 26-JUN-2003

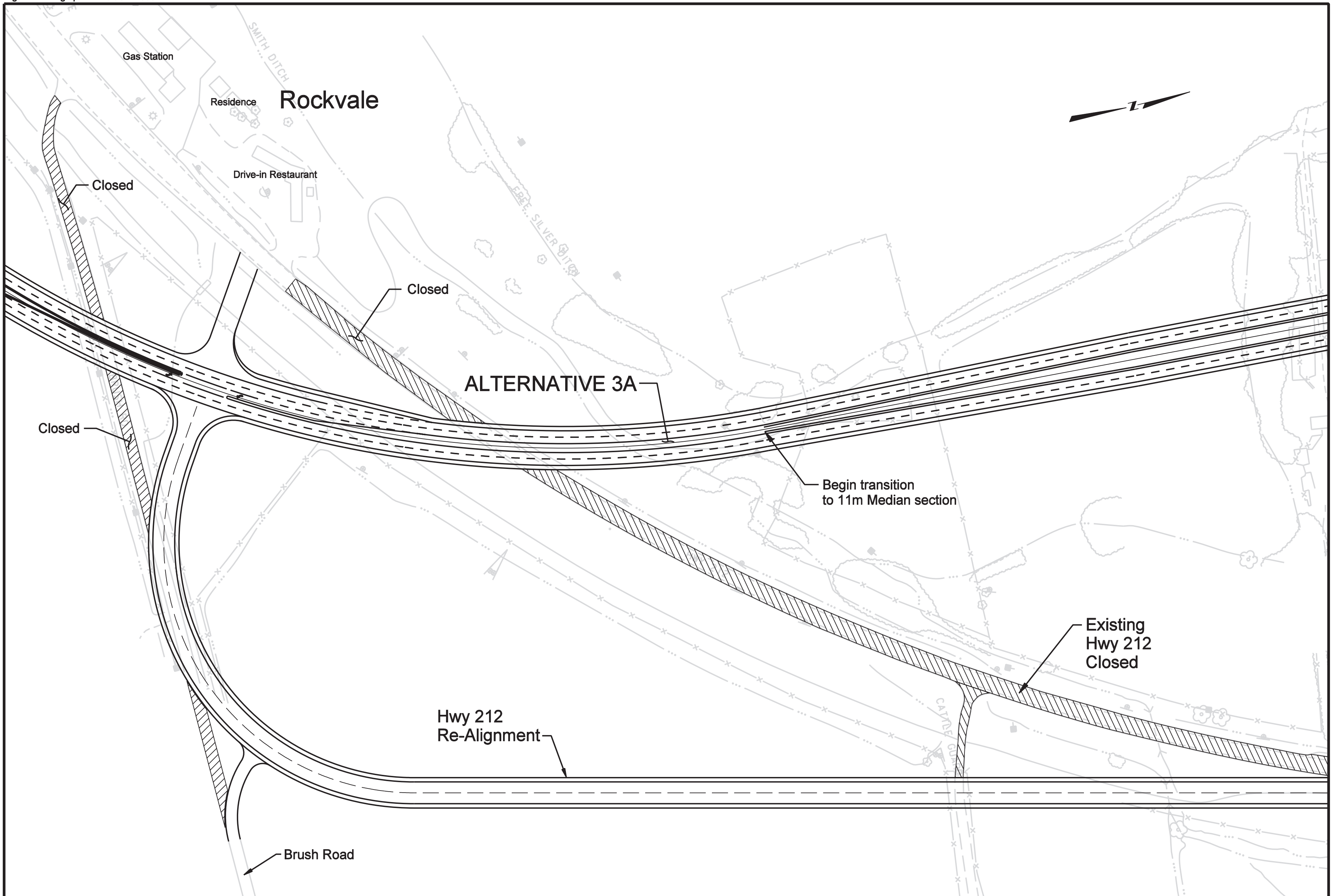


ROCKVALE TO LAUREL
DRAFT ENVIRONMENTAL IMPACT STATEMENT

FIGURE A-12
ALTERNATIVE 3A
212/310 INTERSECTION

CH2MHILL

DRAFT

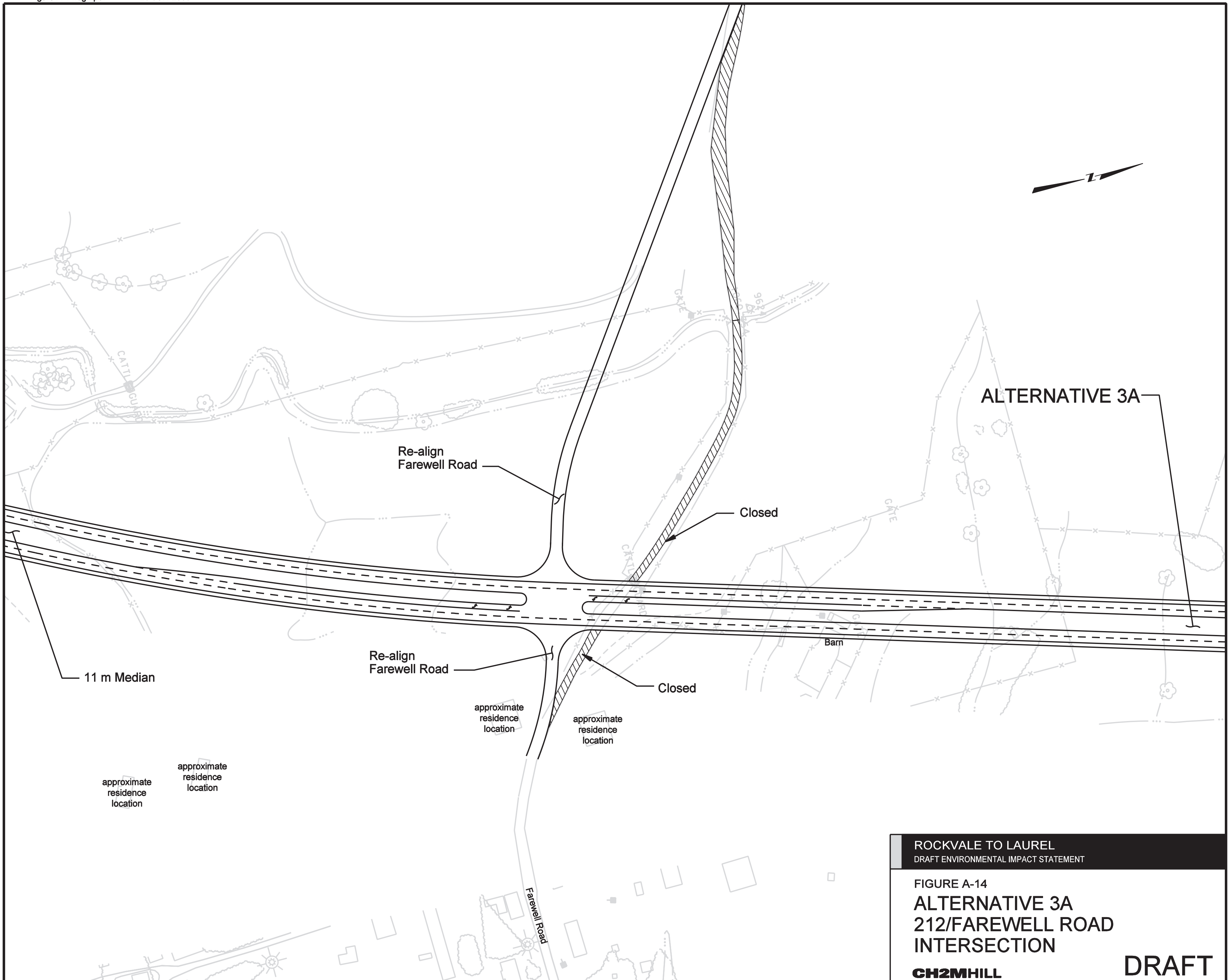


ROCKVALE TO LAUREL
DRAFT ENVIRONMENTAL IMPACT STATEMENT

FIGURE A-13
ALTERNATIVE 3A
212/PTW SOUTH
INTERSECTION

DRAFT

CH2MHILL

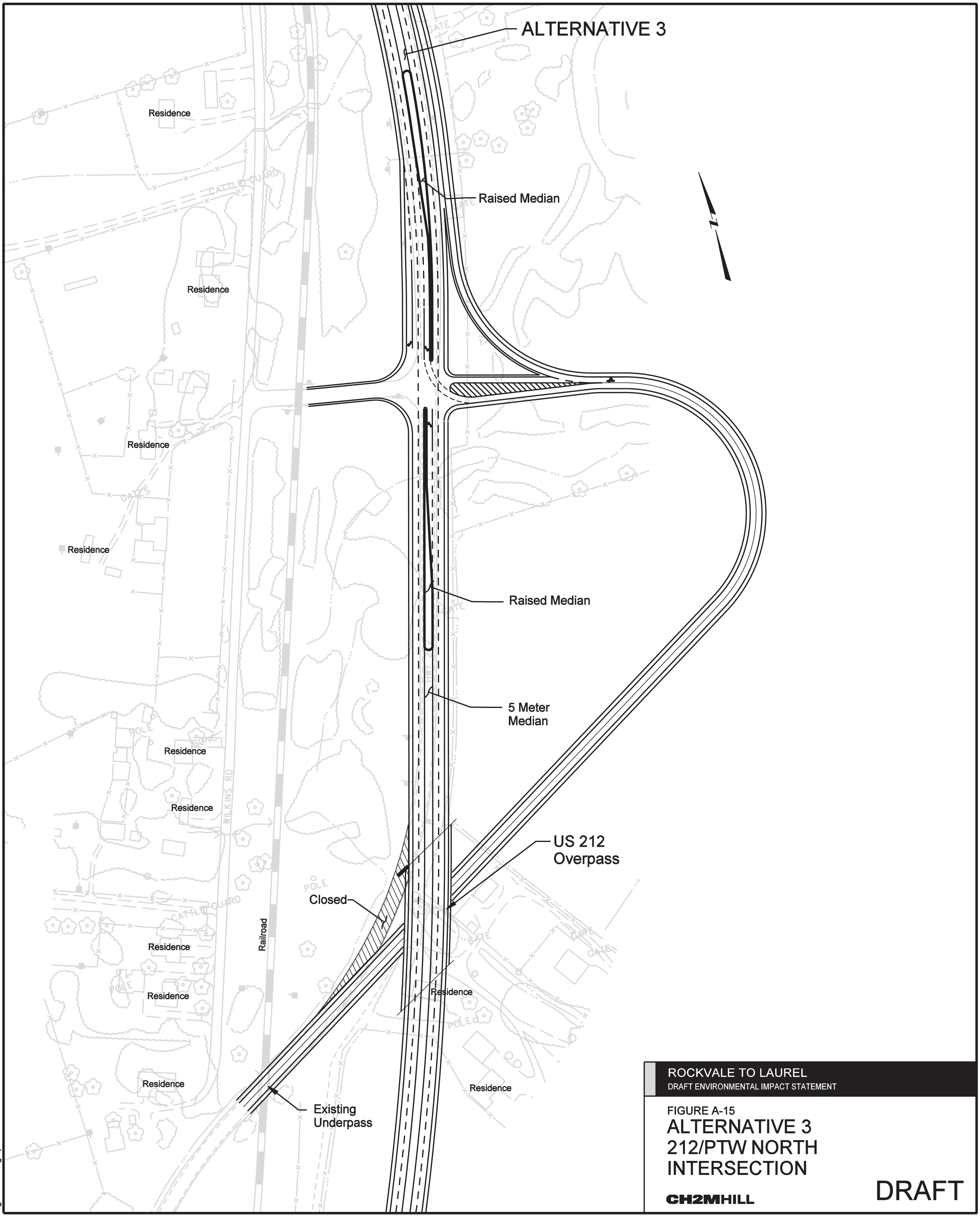


ROCKVALE TO LAUREL
DRAFT ENVIRONMENTAL IMPACT STATEMENT

FIGURE A-14
ALTERNATIVE 3A
212/FAREWELL ROAD
INTERSECTION

CH2MHILL

DRAFT



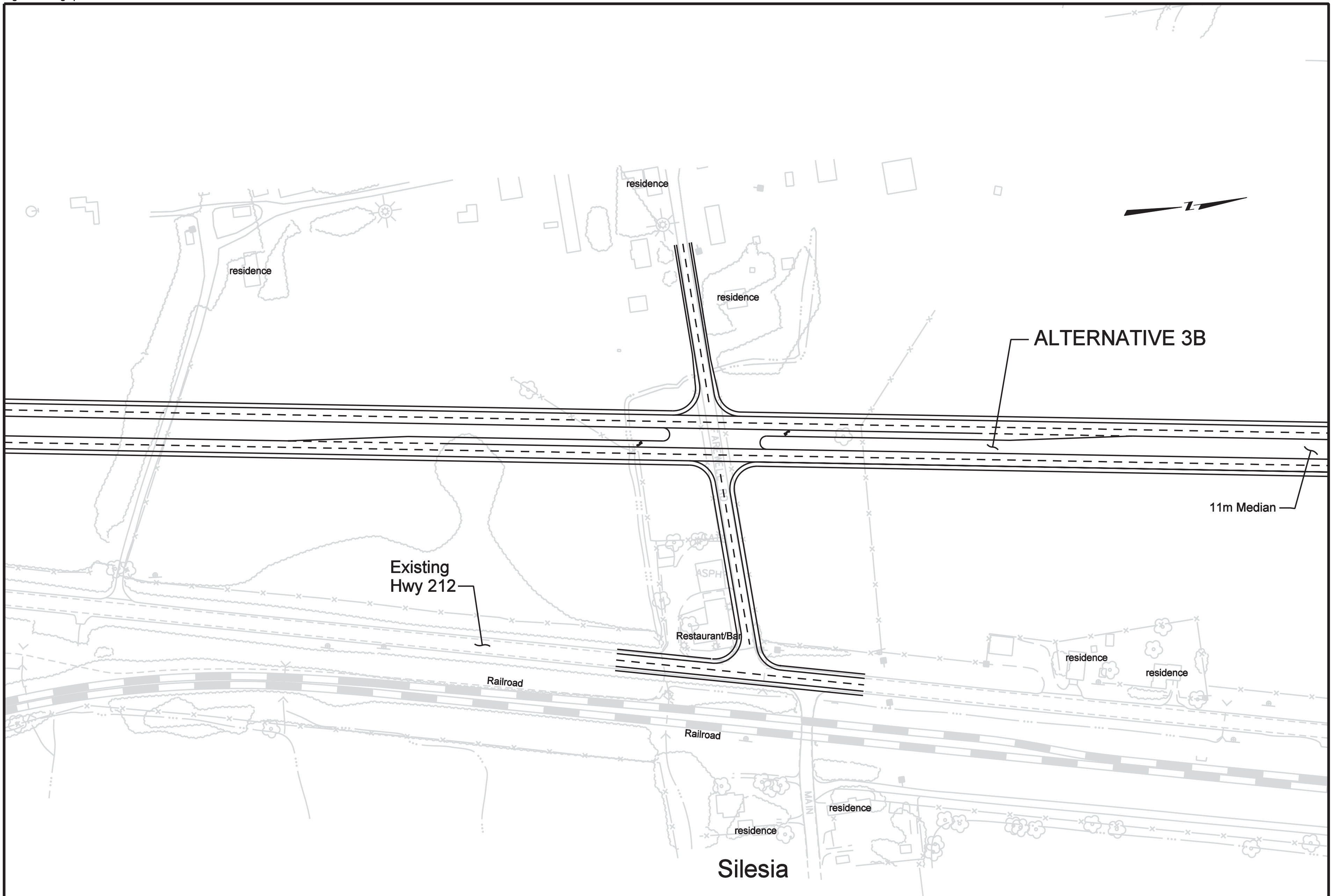
ROCKVALE TO LAUREL
DRAFT ENVIRONMENTAL IMPACT STATEMENT

FIGURE A-15
ALTERNATIVE 3 212/PTW NORTH INTERSECTION

CH2MHILL

DRAFT

Figure A-15.dgn/pdf 26-JUN-2003

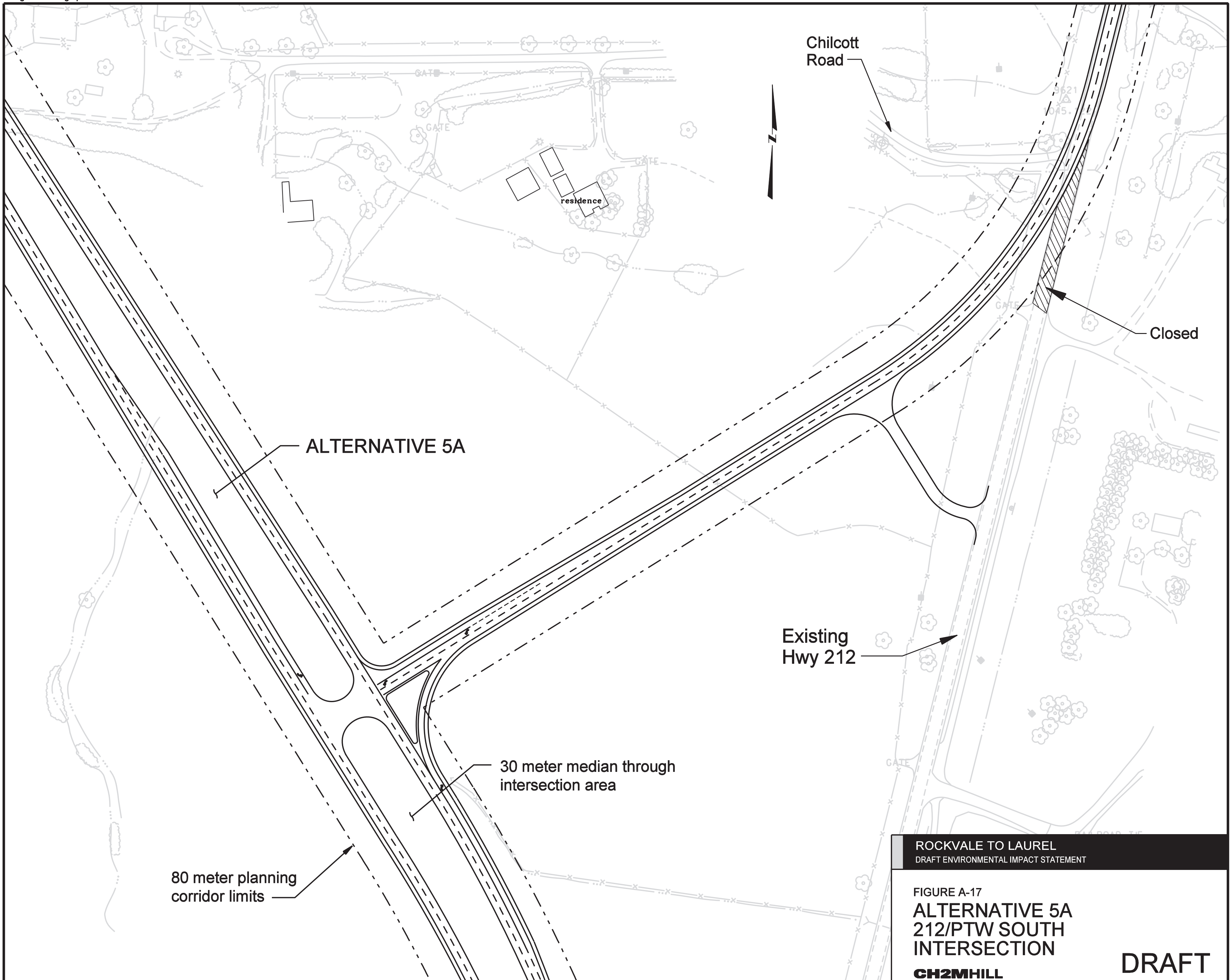


ROCKVALE TO LAUREL
DRAFT ENVIRONMENTAL IMPACT STATEMENT

FIGURE A-16
ALTERNATIVE 3B
212/FAREWELL ROAD
INTERSECTION

CH2MHILL

DRAFT

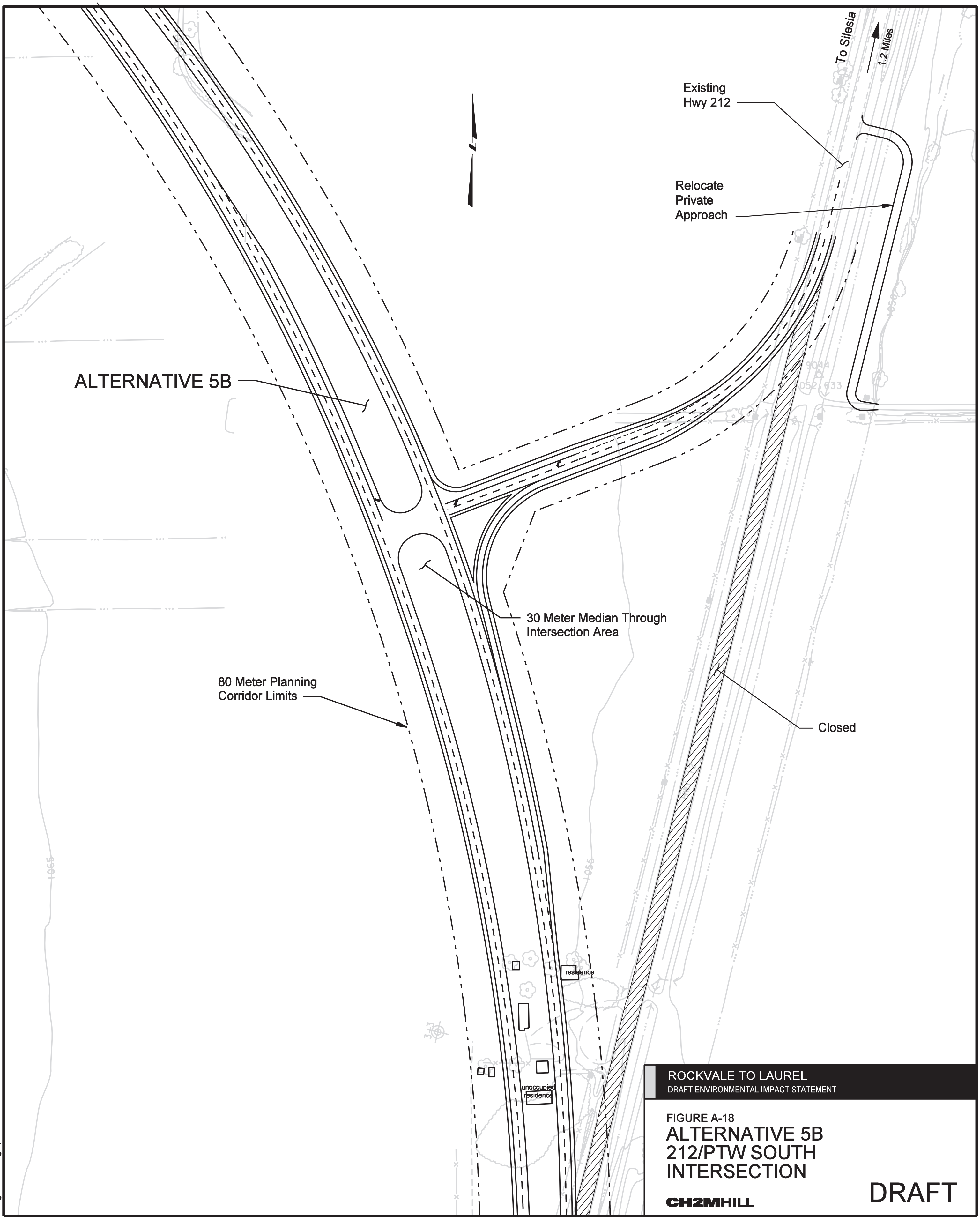


ROCKVALE TO LAUREL
DRAFT ENVIRONMENTAL IMPACT STATEMENT

FIGURE A-17
ALTERNATIVE 5A
212/PTW SOUTH
INTERSECTION

CH2MHILL

DRAFT



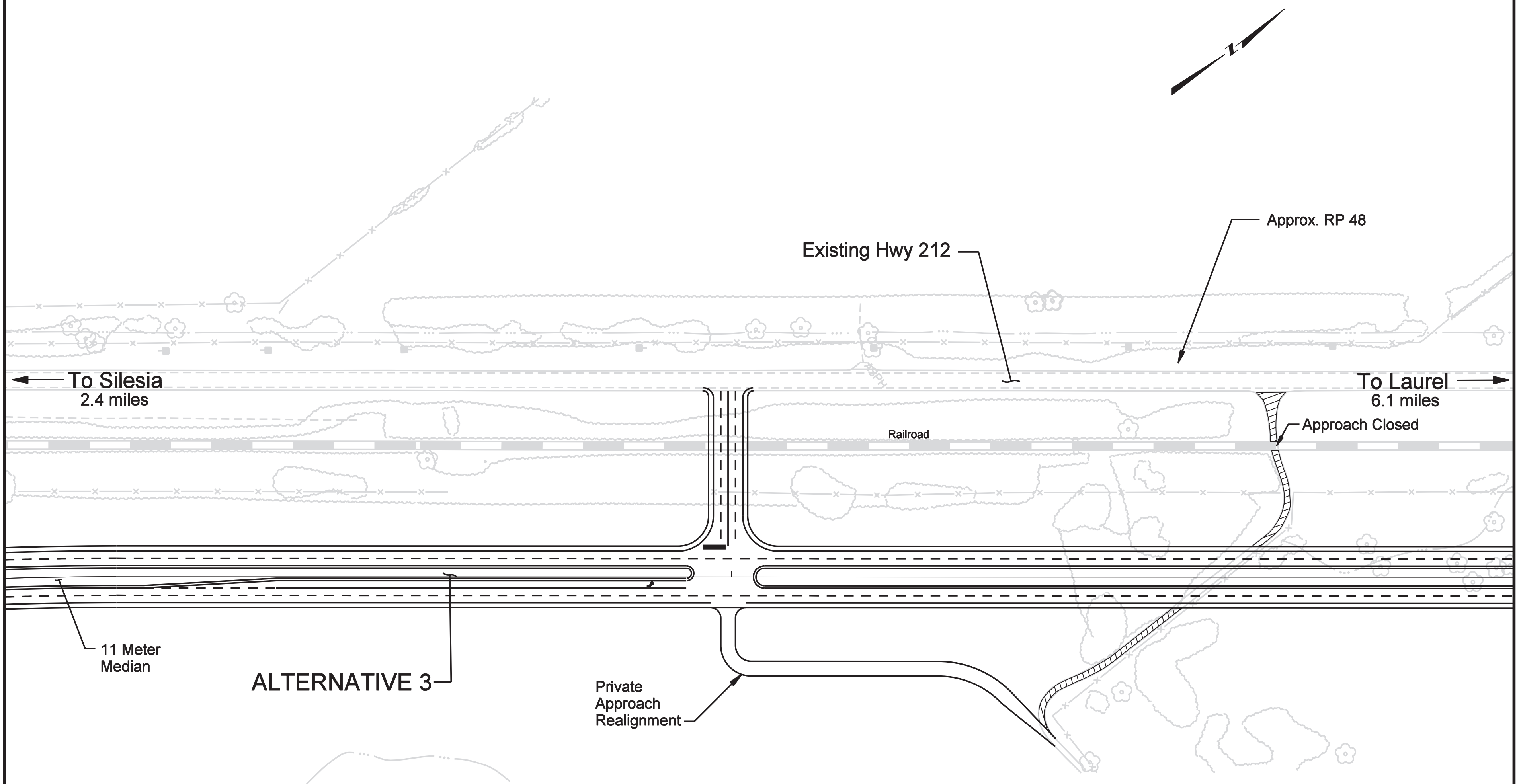
ROCKVALE TO LAUREL
DRAFT ENVIRONMENTAL IMPACT STATEMENT

FIGURE A-18
ALTERNATIVE 5B
212/PTW SOUTH
INTERSECTION

CH2MHILL

DRAFT

Figure A-18.dgn/pdf 26-JUN-2003

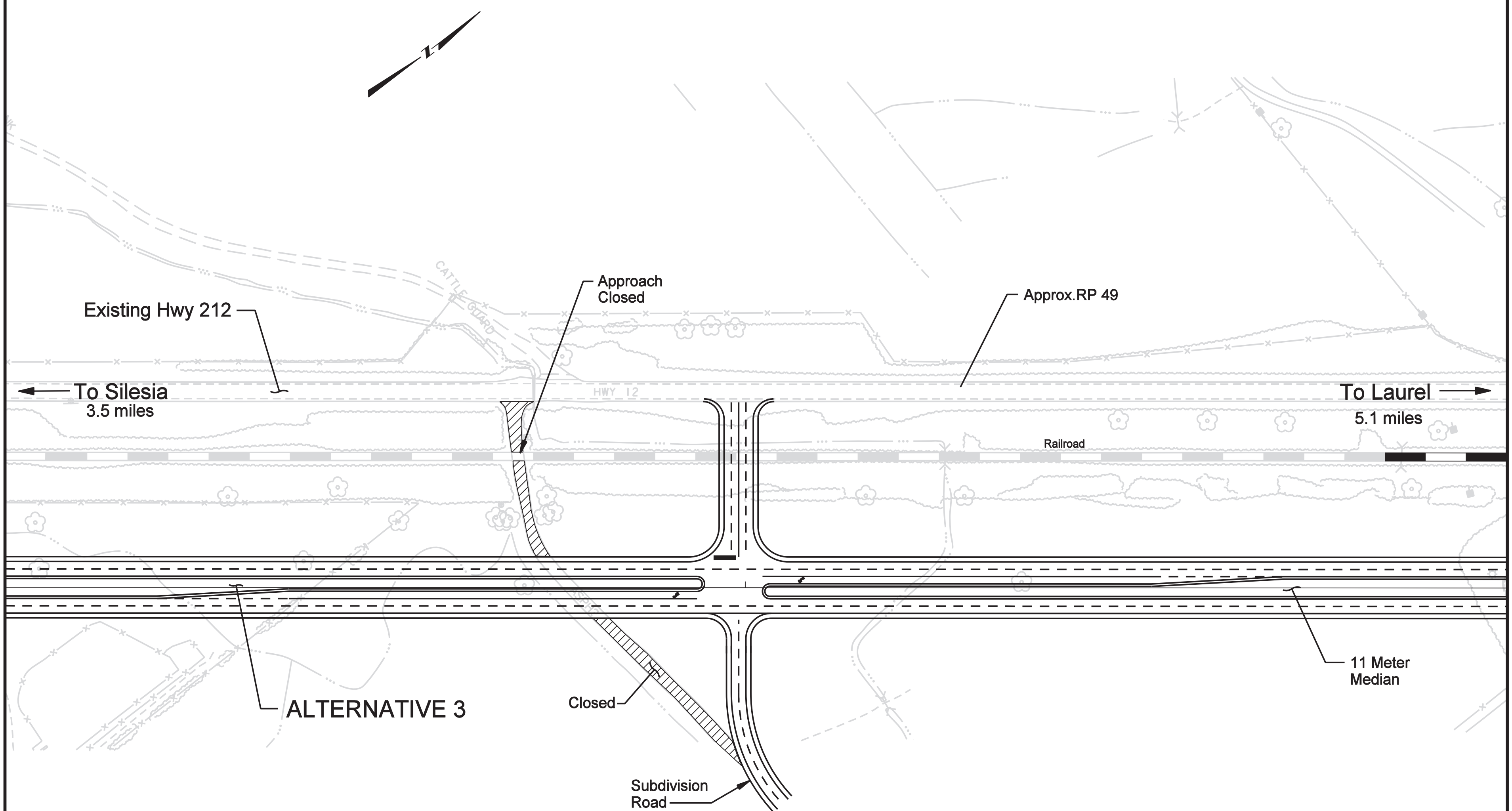


ROCKVALE TO LAUREL
DRAFT ENVIRONMENTAL IMPACT STATEMENT

FIGURE A-19
ALTERNATIVE 3
RAILROAD CROSSING
RP 47.9

CH2MHILL

DRAFT

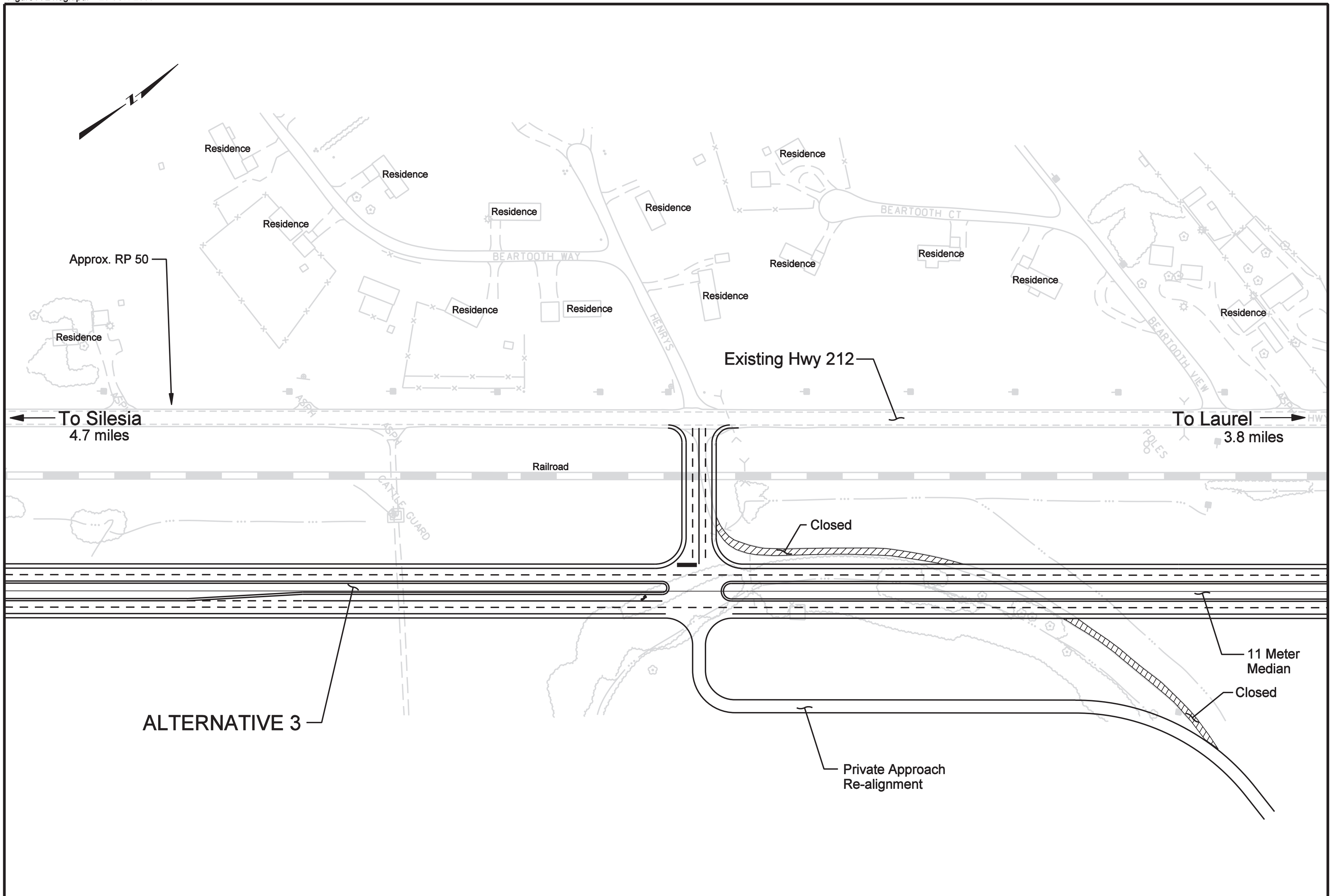


ROCKVALE TO LAUREL
DRAFT ENVIRONMENTAL IMPACT STATEMENT

FIGURE A-20
ALTERNATIVE 3
RAILROAD CROSSING
RP 48.9

CH2MHILL

DRAFT



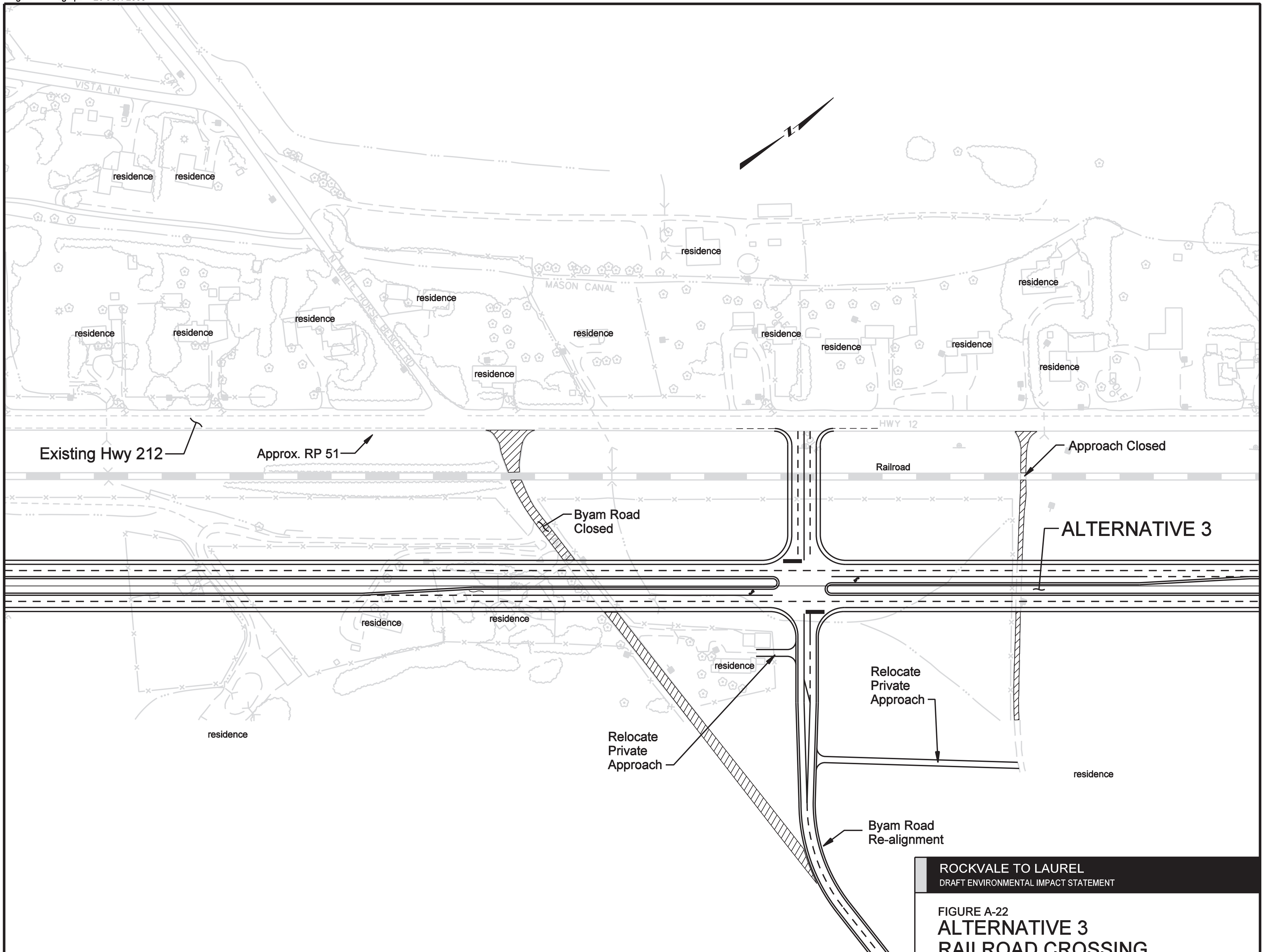
ROCKVALE TO LAUREL
DRAFT ENVIRONMENTAL IMPACT STATEMENT

FIGURE A-21
ALTERNATIVE 3
RAILROAD CROSSING
RP 50.2

CH2MHILL

DRAFT

Figure A-22.dgn/pdf 26-JUN-2003



ROCKVALE TO LAUREL

DRAFT ENVIRONMENTAL IMPACT STATEMENT

FIGURE A-22

ALTERNATIVE 3
RAILROAD CROSSING
BYAM ROAD

CH2MHILL

DRAFT

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Appendix B: Species Information

United States Department of the Interior

FISH AND WILDLIFE SERVICE
ECOLOGICAL SERVICES
MONTANA FIELD OFFICE
585 SHEPARD WAY
HELENA, MONTANA 59601
PHONE (406) 449-5225, FAX (406) 449-5339

M.17 FHWA (Rockvale - Laurel) September 11, 2007

Charles Blair
CH2M HILL
322 East Front Street, Suite 200
Boise, Idaho 83702-7359

Dear Mr. Blair:

This is in response to your letter dated July 17, 2007, regarding a proposal by the Montana Department of Transportation and the Federal Highway Administration to reconstruct U.S. Highway 212 between Rockvale and Laurel in Carbon and Yellowstone Counties in Montana. As your letter indicated, there have been delays associated with the draft environmental impact statement for this project, so you have requested an updated list of threatened, endangered, proposed and candidate species that may occur in the vicinity of this proposed project. In response to earlier such requests, the U.S. Fish and Wildlife Service (Service) has previously provided lists for this project in letters to your firm dated April 11, 2001, December 7, 2001, and January 25, 2005. The most recent list included endangered black-footed ferrets (*Mustela nigripes*) and threatened bald eagles (*Haliaeetus leucocephalus*).

Within areas encompassing the proposed project there have been a few recent changes relative to the status and distribution of listed species. As you know, on July 9, 2007, the Final Rule removing bald eagles in the lower 48 states from the list of endangered and threatened wildlife was published in the Federal Register. This delisting took effect on August 8, 2007. Although no longer covered by the Endangered Species Act (ESA), bald eagles will continue to be protected by the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. So, while consultation pursuant to section 7 of ESA will be no longer be necessary for bald eagles, it is recommended that coordination with the Service occur if it is determined that this project is likely to disturb bald eagles. In addition, endangered whooping cranes (*Grus americana*) have recently been sighted utilizing wetland habitats in nearby portions of Yellowstone County. Therefore, the federally-listed species that may occur in the vicinity of this proposed project that you should now consider in the biological assessment for this project are black-footed ferrets and whooping cranes.

Thank you for your continued coordination of the biological assessment for this project. If you have questions regarding this letter, please contact Scott Jackson, of my staff, at (406)449-5225, extension 201.

Sincerely,

R. Mark Wilson

R. Mark Wilson
Field Supervisor

Copy to: Lou Hanebury, FWS, Billings Suboffice

United States Department of the Interior

FISH AND WILDLIFE SERVICE
ECOLOGICAL SERVICES
MONTANA FIELD OFFICE
100 N. PARK, SUITE 320
HELENA, MONTANA 59601
PHONE (406) 449-5225, FAX (406) 449-5339

M.17 FHWA (Rockvale - Laurel) January 25, 2005

Denny Mengel
CH2M HILL
700 Clearwater Lane
Boise, Idaho 83712-7708

Dear Dr. Mengel:

This is in response to your letter dated December 13, 2004, regarding a proposal by the Montana Department of Transportation and the Federal Highway Administration to reconstruct U.S. Highway 212 between Rockvale and Laurel in Carbon and Yellowstone Counties in Montana. As your letter indicated, there have been delays associated with this project, but you are now preparing the draft environmental impact statement for release this year. In response to an earlier request, the U.S. Fish and Wildlife Service (Service) provided you with a list of federally-listed species that may be present in the vicinity of this project in a letter dated April 11, 2001. A validation of that list was sent in a letter dated December 7, 2001. Because much time has elapsed since the last list was approved, your most recent letter requests an updated list of threatened, endangered, proposed and candidate species that may occur in the vicinity of this proposed project. The Service's Montana Field Office received your request on December 16, 2004.

Within areas encompassing the proposed project, there have been a few recent changes to species proposed for listing and species that are candidates for listing. The proposal to list mountain plovers (*Charadrius montanus*) as threatened was withdrawn by the Service on September 9, 2003. Black-tailed prairie dogs (*Cynomys ludovicianus*) were removed from the list of candidate species on August 12, 2004. Therefore, the species that may occur in the vicinity of this proposed project that you should consider in the biological assessment are the threatened bald eagle (*Haliaeetus leucocephalus*) and the endangered black-footed ferret (*Mustela nigripes*).

Thank you for your continued coordination of the biological assessment for this project. If you have questions regarding this letter, please contact Scott Jackson, of my staff, at (406)449-5225, extension 201.

Sincerely,

R. Mark Wilson

R. Mark Wilson
Field Supervisor

York, Jenni/BOI

From: Mengel, Denny/BOI
Sent: February 16, 2003 11:51 AM
To: Alters, Steve/HMT; Bruce Barrett (Bruce Barrett); Studt, Mark
Cc: York, Jenni/BOI
Subject: FW: Hwy. 212; Rockvale - Laurel; EIS

Updated T&E species list.

Denny Mengel, Ph.D., CPSS
Senior Ecologist
CH2M HILL
Boise, Idaho
208/345-5310
208/841-0733 (Cell)

-----Original Message-----
From: Scott_Jackson@fws.gov [mailto:Scott_Jackson@fws.gov]
Sent: February 15, 2003 2:42 PM
To: Mengel, Denny/BOI
Cc: Mark_Wilson@fws.gov; lou_hanebury@fws.gov; npettit@state.mt.us
Subject: Hwy. 212; Rockvale - Laurel; EIS

Hello Denny,

In response to your phone request this week regarding an updated species list relative to the subject highway reconstruction project, I offer the following. The Service issued a list of threatened, endangered, proposed, and candidate species that may occur in the vicinity of U.S. Highway 212 between Rockvale and Laurel in Carbon and Yellowstone counties, Montana in a letter to you dated April 11, 2001. That list included threatened bald eagles, endangered black-footed ferrets, proposed as threatened mountain plovers, and candidate black-tailed prairie dogs. In a subsequent letter to you dated December 7, 2001, the Service responded to your request for an updated species list, indicating that no changes had occurred in the project corridor with respect to listed species or their known distribution, so the list provided on April 11, 2001 remained valid. More time has now passed without the biological assessment for this project being completed, so you now have appropriately requested notification of any recent changes to this species list. No changes in listed species occurrence or status have recently occurred within this project corridor. Therefore, the list of species provided to you in our letter dated April 11, 2001, and reaffirmed on December 7, 2001, remains current and up to date.

Thank you for your inquiry. It was nice to visit with you again the other day. I hope this project is progressing and that all is going well for you.

Scott Jackson, Wildlife Biologist
U.S. Fish and Wildlife Service
100 North Park Avenue, Suite 320
Helena, Montana 59601
(406)449-5225, ext. 201
scott_jackson@fws.gov

United States Department of the Interior

RECEIVED
APR 1 6 2001
CH2M HILL
BOISE

FISH AND WILDLIFE SERVICE
MONTANA FIELD OFFICE
100 N. PARK, SUITE 320
HELENA, MONTANA 59601
PHONE (406) 449-5225, FAX (406) 449-5339

M.17 FHWA (Rockvale - Laurel)

April 11, 2001

Denny Mengel
CH2M HILL
700 Clearwater Lane
Boise, Idaho 83712-7708

Dear Dr. Mengel:

This is in response to your March 16 letter regarding a proposal by the Montana Department of Transportation and the Federal Highway Administration to reconstruct US Highway 212 between Rockvale and Laurel in Carbon and Yellowstone counties in Montana. Your letter requested information the US Fish and Wildlife Service (Service) may have pertaining to threatened and endangered (T/E) species that may occur in the vicinity of the proposed project. The Service received your letter on March 22. These comments have been prepared under the authority of, and in accordance with, the provisions of the Endangered Species Act of 1973, as amended (Act) (16 U.S.C. 1531 et.seq.) and the Fish and Wildlife Coordination Act (16 U.S.C. 661 et. seq.).

In accordance with section 7(c) of the Act, the Service has determined that the following threatened, endangered, proposed and candidate species may be present in the project area:

Listed Species	Expected Occurrence
bald eagle (*Haliaeetus leucocephalus*); threatened	spring or fall migrant; winter resident; nesting
black-footed ferret (*Mustela nigripes*); endangered	potential occurrence associated with prairie dog complexes
Proposed Species	**Expected Occurrence**
mountain plover (*Charadrius montanus*); proposed as threatened	potential occurrence in shortgrass prairie habitat
Candidate Species	**Expected Occurrence**
black-tailed prairie dog (*Cynomys ludovicianus*)	potential occurrence in shortgrass prairie habitat

Section 7(c) of the Act requires that Federal agencies proposing major construction activities complete a biological assessment to determine the effects of the proposed actions on listed and proposed species and use the biological assessment to determine whether formal consultation is required. A major construction activity is defined as "a construction project (or other undertaking having similar physical impacts) which is a major Federal action significantly affecting the quality of the human environment as referred to in the National Environmental Policy Act (NEPA)" (50 CFR Part 402). If a biological assessment is not required (i.e. all other actions), the Federal agency is still required to review their proposed activities to determine whether listed species may be affected. If such a determination is made, formal consultation with the Service is required.

For those actions wherein a biological assessment is required, the assessment should be completed within 180 days of initiation. This time frame can be extended by mutual agreement between the Federal agency or its designated non-Federal representative and the Service. If an assessment is not initiated within 90 days, this list of threatened and endangered species should be verified with the Service prior to initiation of the assessment. The biological assessment may be undertaken as part of the Federal agency's compliance of section 102 of NEPA and incorporated into the NEPA documents. We recommend that biological assessments include the following:

1. A description of the project.
2. A description of the specific area that may be affected by the action.
3. The current status, habitat use, and behavior of T/E species in the project area.
4. Discussion of the methods used to determine the information in Item 3.
5. An analysis of the affects of the action on listed species and proposed species and their habitats, including an analysis of any cumulative effects.
6. Coordination/mitigation measures that will reduce/eliminate adverse impacts to T/E species.
7. The expected status of T/E species in the future (short and long term) during and after project completion.
8. A determination of "is likely to adversely affect" or "is not likely to adversely affect" for listed species.
9. A determination of "is likely to jeopardize" or "is not likely to jeopardize" for proposed species.
10. Citation of literature and personal contacts used in developing the assessment.

If it is determined that a proposed program or project "is likely to adversely affect" any listed species, formal consultation should be initiated with this office. If it is concluded that the project "is not likely to adversely affect" listed species, the Service should be asked to review the assessment and concur with the determination of no adverse effect.

Pursuant to section 7(a) (4) of the Act, if it is determined that any proposed species may be jeopardized, the Federal agency should initiate a conference with the Service to discuss

conservation measures for those species. For more information regarding species of concern occurring in the project area, including proposed and candidate species, please contact the Montana Natural Heritage Program, 1515 East 6th Ave., Helena, 59601, (406) 444-3009.

A Federal agency may designate a non-Federal representative to conduct informal consultation or prepare biological assessments. However, the ultimate responsibility for Section 7 compliance remains with the Federal agency and written notice should be provided to the Service upon such a designation. We recommend that Federal agencies provide their non-Federal representatives with proper guidance and oversight during preparation of biological assessments and evaluation of potential impacts to listed species.

Section 7(d) of the Act requires that the Federal agency and permit/applicant shall not make any irreversible or irretrievable commitment of resources which would preclude the formulation of reasonable and prudent alternatives until consultation on listed species is completed.

Any power lines in the vicinity, if not properly constructed, could pose electrocution hazards for bald eagles. To conserve this species, and other large raptors protected by Federal law, we urge that any power lines that need to be modified or reconstructed as a result of this project be raptor-proofed following the criteria and techniques outlined in the publication, "Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 1996." A copy may be obtained from: Jim Fitzpatrick, Treasurer, Carpenter Nature Center, 12805 St. Croix Trail South, Hastings, MN 55033. The use of such techniques would likely be most beneficial adjacent to expected raptor foraging areas (i.e. stream crossings or wetlands that support populations of waterfowl).

Your letter does not mention whether wetlands might be impacted by the proposed construction project. If so, Corps of Engineers (Corps) Section 404 permits may eventually be required. In that event, depending on permit type and other factors, the Service may be required to review permit applications and will recommend any protection or mitigation measures to the Corps as may appear reasonable and prudent based on the information available at that time.

If you have questions regarding this letter, please contact Mr. Scott Jackson, of my staff, at the address above or by phone at (406) 449-5225, ext. 201.

Sincerely,

R. Mark Wilson

R. Mark Wilson
Field Supervisor

Copies to: - Dave Hill, Environmental Services, MT Dept. of Transportation, Helena
- FWS-ES; Billings Suboffice

MONTANA
Natural Heritage
Program

P.O. Box 201800 • 1515 East Sixth Avenue • Helena, MT 59620-1800 • fax 406.444.0581 • tel 406.444.5354 • http://mtnhp.org

July 19, 2007

Chuck Blair
Senior Wildlife Ecologist
CH2M HILL
322 East Front Street, Suite 200
Boise, ID 83702

Dear Chuck,

I am writing in response to your recent request regarding species of concern in the vicinity of U.S. Highway 212 from Rockvale to Laurel, including T02S, R23E, Section 36; T02S, R24E, Sections 15, 16, 21, 22, 27, 28, 29, 31, 32 and 33; T03S, R23E, Sections 1, 2, 11, 12, 13, 14, 22, 23, 24, 25, 26, 27, 34 and 35; T03S, R24E, Sections 5, 6 and 7;and, T04S, R23E, Sections 2 and 3. We checked our databases for information in this general area and have enclosed 9 species of concern reports, 4 animal inferred extent reports, 2 ecological site reports, one map and explanatory material.

Please keep in mind the following when using and interpreting the enclosed information and maps:

(1) These materials are the result of a search of our database for species of concern that occur in an area defined by requested township, range and sections with an additional one-mile buffer surrounding the requested area. This is done to provide a more inclusive set of records and to capture records that may be immediately adjacent to the requested area. Reports are provided for the species of concern that are located in your requested area with a one-mile buffer. Species of concern outside of this area may be depicted on the map but are not reported.

(2) On the map, polygons represent one or more source features as well as the locational uncertainty associated with the source features. A source feature is a point, line, or polygon that is the basic mapping unit of an EO Representation. The recorded location of the occurrence may vary from its true location due to many factors, including the level of expertise of the data collector, differences in survey techniques and equipment used, and the amount and type of information obtained. Therefore, this inaccuracy is characterized as locational uncertainty, and is now incorporated in the representation of an EO. If you have a question concerning a specific EO, please do not hesitate to contact us.

(3) This report may include sensitive data, and is not intended for general distribution, publication or for use outside of your agency. In particular, public release of specific location information may jeopardize the welfare of threatened, endangered, or sensitive species or communities.

(4) The accompanying map(s) display management status, which may differ from ownership. Also, this report may include data from privately owned lands, and approval by the landowner is advisable if specific location information is considered for distribution. Features shown on this map do not imply public access to any lands.

(5) Additional biological data for the search area(s) may be available from other sources. We suggest you contact the U.S. Fish and Wildlife Service for any additional information on threatened and endangered species (406-449-5225). Also, significant gaps exist in the Heritage Program's fisheries data, and we suggest you contact the Montana Rivers Information System for information related to your area of interest (406-444-3345).

(6) Additional information on species habitat, ecology and management is available on our web site in the Plant and Animal Field Guides, which we encourage you to consult for valuable information. You can access these guides at http://mtnhp.org. General information on any species can be found by accessing the link to NatureServe Explorer.

The results of a data search by the Montana Natural Heritage Program reflect the current status of our data collection efforts. These results are not intended as a final statement on sensitive species within a given area, or as a substitute for on-site surveys, which may be required for environmental assessments. The information is intended for project screening only with respect to species of concern, and not as a determination of environmental impacts, which should be gained in consultation with appropriate agencies and authorities.

I hope the enclosed information is helpful to you. Please feel free to contact me at (406) 444-3290 or via my e-mail address, below, should you have any questions or require additional information.

Sincerely,

Martin P. Miller
Montana Natural Heritage Program
martinm@mt.gov

Montana Species of Concern
US HWY 212
Rockvale to Laurel

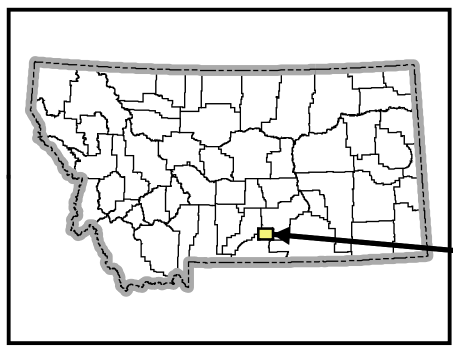
Species of Concern

- Vascular Plant
- Nonvascular Plant
- Other Botanical
- Vertebrate Animal
- Invertebrate Animal
- Other Zoological
- Animal Inferred Extent
- Ecological Sites

SPECIES OF CONCERN: A polygon feature representing only what is known from direct observation with a defined level of certainty regarding the spatial location of the feature.

INFERRED EXTENT: Areas that can be inferred to be probable occupied habitat based on the spatial location of the direct observation of a species and general information available for the foraging area and home range size of the species.

SITES: Ecological information that may be useful in assessing biological values and interpreting Species of Concern data.



- Special Designations
- Conservation Easements

Public Lands

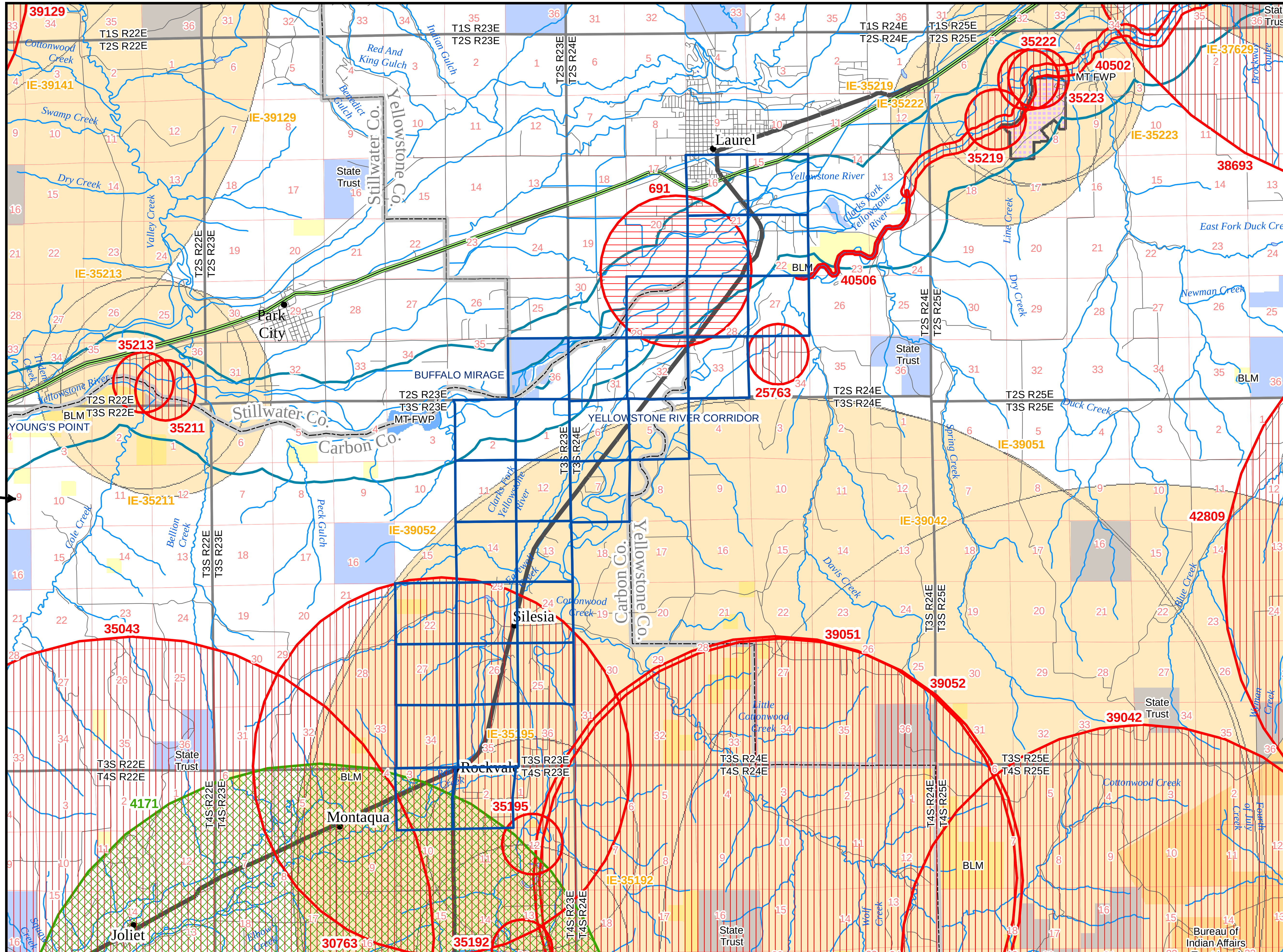
- BLM
- Bureau of Reclamation
- US Fish and Wildlife Service
- National Park Service
- US Forest Service
- Other USDA (ag research stations)
- Army Corps of Engineers
- Other Department of Defense
- Undifferentiated state
- DNRC (state trust lands)
- Montana Fish, Wildlife & Parks
- University, Institutions, MDT
- DNRC (water project lands)
- Local Government
- Bureau of Indian Affairs Trust
- Tribal Lands
- Plum Creek
- Private Land Trusts

Not all legend items may occur on the map.

Features shown on this map do not imply public access to any lands.

This map displays management status, which may vary from ownership.

MONTANA Natural Heritage Program



Natural Resource Information System, Montana State Library
1515 East Sixth Ave., Helena, MT 59620-1800

0 0.5 1 2 3 4 5 Miles

406 444-5354 http://mtnhp.org mtnhp@mt.gov

Map Document: (K:\Requests\08\PRVT\08prvt0021\08prvt0021.mxd) 7/19/2007

MONTANA Natural Heritage Program

Montana Natural Heritage Program

1515 East Sixth Ave., Helena, Montana 59620-1800
(406) 444-5354 http://mtnhp.org

Explanation of Species of Concern Reports

Since 1985, the Montana Natural Heritage Program (MTNHP) has been compiling and maintaining an inventory of elements of biological diversity in Montana. This inventory includes plant species, animal species, plant communities, and other biological features that are rare, endemic, disjunct, threatened, or endangered throughout their range in Montana, vulnerable to extirpation from Montana, or in need of further research.

Element Occurrences: Individual species, communities, or biological features are referred to as "elements." An "**Element Occurrence**" (**EO**) is an area depicting only what is known from direct observation with a defined level of certainty regarding the spatial location of the feature. If an observation can be associated with a map feature that can be tracked (e.g., a wetland) then this polygon feature is used to represent the EO. No inferences beyond the direct observation, and associated uncertainty, can be made and still called an Element Occurrence. An "Element Occurrence" generally falls into one of the following three categories:

Plants: A documented location of a specimen collection or observed plant population. In some instances, adjacent, spatially separated clusters are considered subpopulations and are grouped as one occurrence (e.g., the subpopulations occur in ecologically similar habitats, and are within approximately one air mile of one another).

Animals: The location of a specimen collection or of a verified sighting; assumed to represent a breeding population. Additional collections or sightings are often appended to the original record.

Other: Significant biological features not included in the above categories, such as bird rookeries, peatlands, or state champion trees.

Inferred Extents: Areas that can be inferred as probable occupied habitat based on direct observation of a species location and what is known about the foraging area or home range size of the species.

Ecological Information: Areas for which we have ecological information are represented on the map as either shaded polygons (where small and/or well defined) or simply as map labels (where they are large generally-defined landscapes). Descriptive information about these areas is contained in the associated report. Such information can be useful in assessing biological values and interpreting Species of Concern data.

The quantity and quality of data contained in MTNHP reports is dependent on the research and observations of the many individuals and organizations that contribute information to the program. Please keep in mind that the absence of information for an area does not mean the absence of significant biological features, since no surveys may have been conducted there. Reports produced by the Montana Natural Heritage Program summarize information documented in our databases at the time of a request. These reports are not intended as a final statement on the elements or areas being considered, nor are they a substitute for on-site surveys, which may be required for environmental assessments.

As a user of MTNHP, your contributions of data are essential to maintaining the accuracy of our databases. New or updated location information for all species of concern is always welcome.

We encourage you to visit our website at http://**mtnhp.org.** On-line tools include species lists, an electronic version of *Montana Bird Distribution*, and *Montana Rare Plant* and *Animal Field Guides*, which contain photos, illustrations, and supporting information on Montana's species of concern. Additional data are available on most species and ecological areas identified in our reports.

If you have questions or need further assistance, please contact us either by phone at (406/444-5354), e-mail (mtnhp@mt.gov) or at the mailing address above.

Revision Date: 7/7/2006

Data Descriptions

The section below lists the names and definitions for descriptions of the data fields used in the reports. Certain codes and abbreviations are used in Element Occurrence reports. Although many of these are very straightforward, the following explanations should answer most questions.

Map Label: The label for the element occurrence as it appears on the map.

Inferred Extent Map Label: The label for the inferred extent that is related to the element occurrence. An Inferred Extent is an area that can be inferred to be probable occupied habitat based on the observed location of a species and what is known about the foraging area and home range size of the species.

Element Subnational ID: The unique code used by the state or province to identify a specific element.

EO Number: Number that identifies the particular occurrence of the element.

Scientific Name: Latin (scientific) name.

Common Name: Commonly recognized name.

Species of Concern/Potential Concern: This value indicates whether the species is a "Species of Concern" (Y) or of "Potential Concern" (W).

Last Observation Date: The date the Element Occurrence was last observed extant at the site (not necessarily the date the site was last visited).

First Observation Date: The date the Element Occurrence was first reported at the site.

EO Rank: indicates the relative value of the Element Occurrence (EO) with respect to other occurrences of the Element, based on an assessment of estimated viability (species).

Values:

A - Excellent estimated viability/ecological integrity
A? - Possibly excellent estimated viability/ecological integrity
AB - Excellent or good estimated viability/ecological integrity
AC - Excellent, good, or fair estimated viability/ecological integrity
B - Good estimated viability/ecological integrity
B? - Possibly good estimated viability/ecological integrity
BC - Good or fair estimated viability/ecological integrity
BD - Good, fair, or poor estimated viability/ecological integrity
C - Fair estimated viability/ecological integrity
C? - Possibly fair estimated viability/ecological integrity
CD - Fair or poor estimated viability/ecological integrity
D - Poor estimated viability/ecological integrity
D? - Possibly poor estimated viability/ecological integrity
E - Verified extant (viability/ecological integrity not assessed)
F - Failed to find
F? - Possibly failed to find
H - Historical
H? - Possibly historical
X - Extirpated
X? - Possibly extirpated
U - Unrankable
NR - Not ranked

EO Data: Data collected on the biology of this Element Occurrence. Specific information may include number of individuals, vigor, habitat, soils, associated species, and other characteristics.

Natural Heritage Rank Definitions

G1/S1 At high risk because of extremely limited and/or rapidly declining numbers, range, and/or habitat, making it highly vulnerable to global extinction or extirpation in the state.
G2/S2 At risk because of very limited and/or declining numbers, range, and/or habitat, making it vulnerable to global extinction or extirpation in the state.
G3/S3 Potentially at risk because of limited and/or declining numbers, range, and/or habitat, even though it may be abundant in some areas.
G4/S4 Uncommon but not rare (although it may be rare in parts of its range), and usually widespread. Apparently not vulnerable in most of its range, but possibly cause for long-term concern.
G5/S5 Common, widespread, and abundant (although it may be rare in parts of its range). Not vulnerable in most of its range.
GU/SU Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.
GH/SH **H**istorically occurred; may be rediscovered.
GX / SX Believed to be extinct; historical records only.

Other codes and rank modifiers:

B/N State rank modifiers indicating the breeding status for a migratory species; B = Breeding, N = Non-breeding.
HYB A global rank denoting a hybrid.
M A state rank modifier indicating migratory stopover status for a species.
Q A global rank modifier indicating that there are taxonomic questions or problems.
T Denotes the rank for a subspecific taxon (subspecies or population); appended to the global rank for the full species. The S Rank following applies to the subspecific taxon.
S Denotes inexactness or uncertainty.

Federal Status Designations

Current federal agency status designations are also provided, including legal status under the U.S. Endangered Species Act, and administrative designations of the U.S. Forest Service and Bureau of Land Management. Where the ESA listing status has changed since 2003, the new status is bolded and underlined.

U.S. Fish and Wildlife Service

This value indicates status under the federal Endangered Species Act of 1973 based on categories defined by the U.S. Fish and Wildlife Service (16 U.S.C.A. §1531-1543 (Supp. 1996)).

E Listed Endangered
T Listed Threatened
PE Proposed Endangered
PT Proposed Threatened
XN Experimental Nonessential
C Candidate (species for which the U.S. Fish and Wildlife Service has sufficient information on biological status and threats to propose listing as threatened or endangered)
PDL Proposed for delisting - Any species for which a final rule has been published in the Federal Register to delist the species.

U.S. Forest Service

The U.S. Forest Service Manual (2670.22) defines the status of Sensitive species on Forest Service lands. The Regional Forester (Northern Region) designates Sensitive species on National Forests in Montana. This designation applies only on USFS-administered lands.

S Sensitive; animal and plant species identified by the Regional Forester for which population viability is a concern as evidenced by significant downward trend in population or a significant downward trend in habitat capacity.

U.S. Bureau of Land Management

The BLM 6840 Manual defines the status of species on Bureau of Land Management lands. They apply only on BLM-administered lands.

S Sensitive; species that are proven imperiled in at least part of their ranges and are documented to occur on BLM lands.

MONTANA Natural Heritage Program
Natural Resource Information System
Montana State Library
PO Box 201800
Helena, MT 59620-1800
(406) 444-3009 mtnhp@state.mt.us

Species of Concern Data Report

Thursday, July 19, 2007

Visit http://mtnhp.org for additional information.

Inferred Extent Report

Inferred Extents are areas that can be inferred to be probable occupied habitat based on the spatial location of the direct observation of a species and general information available for the foraging area or home range size of the species.

EO_ID

Inferred Extent For: Centrocercus urophasianus

Common Name: Greater Sage-grouse

Inferred Extent Map Label: IE- 39,051

Inferred Extent For: Centrocercus urophasianus

Common Name: Greater Sage-grouse

Inferred Extent Map Label: IE- 39,052

Inferred Extent For: Haliaeetus leucocephalus

Common Name: Bald Eagle

Inferred Extent Map Label: IE- 35,192

Inferred Extent For: Haliaeetus leucocephalus

Common Name: Bald Eagle

Inferred Extent Map Label: IE- 35,195

Centrocercus urophasianus

Element Occurence Map Label: 39051 **Element Subnational ID:** 10626 **EO Number:** 720779

Common Name: Greater Sage-grouse

Species of Concern (Y) / Potential Concern (W): Y

First Observation Date:

Last Observation Date:

Description: Vertebrate Animal

Natural Heritage Ranks:

State: S3

Global: G4

Federal Agency Status:

U.S. Fish & Wildlife Service:

U.S. Forest Service: SENSITIVE

U.S. Bureau of Land Management: SENSITIVE

EO Rank:

EO Data

Bird Rookery

Element Occurence Map Label: 691 **Element Subnational ID:** 14825 **EO Number:** 9

Common Name: Bird Rookery

Species of Concern (Y) / Potential Concern (W): W

First Observation Date: 1988

Last Observation Date: 1988-06-15

Description: Animal Assemblage

Natural Heritage Ranks:

State: SNR

Global: GNR

Federal Agency Status:

U.S. Fish & Wildlife Service:

U.S. Forest Service:

U.S. Bureau of Land Management:

EO Rank:

EO Data

Great blue heron: Largest in state - approximately 200 nests. Double-crested cormorant: Approximately 40 nests in the southwest corner of the rookery.

Centrocercus urophasianus

Element Occurence Map Label: 39052 **Element Subnational ID:** 10626 **EO Number:** 720780

Common Name: Greater Sage-grouse

Species of Concern (Y) / Potential Concern (W): Y

First Observation Date:

Last Observation Date:

Description: Vertebrate Animal

Natural Heritage Ranks:

State: S3

Global: G4

Federal Agency Status:

U.S. Fish & Wildlife Service:

U.S. Forest Service: SENSITIVE

U.S. Bureau of Land Management: SENSITIVE

EO Rank:

EO Data

Hemicarpha drummondii

Element Occurence Map Label: **4171**

Element Subnational ID: 13381

EO Number: 1

Common Name: Drummond's Hemicarpha

Species of Concern (Y) / Potential Concern (W): **Y**

Description: Vascular Plant

First Observation Date: 1941-08-03

Last Observation Date: 1941-08-03

Natural Heritage Ranks:

State: SH

Global: G4G5

Federal Agency Status:

U.S. Fish & Wildlife Service:

U.S. Forest Service:

U.S. Bureau of Land Management:

EO Rank: H

EO Data

NOT ABUNDANT; 3-6 INCHES TALL.

Lampropeltis triangulum

Element Occurence Map Label: **35043**

Element Subnational ID: 14060

EO Number: 20871

Common Name: Milksnake

Species of Concern (Y) / Potential Concern (W): **Y**

Description: Vertebrate Animal

First Observation Date:

Last Observation Date:

Natural Heritage Ranks:

State: S2

Global: G5

Federal Agency Status:

U.S. Fish & Wildlife Service:

U.S. Forest Service: SENSITIVE

U.S. Bureau of Land Management: SENSITIVE

EO Rank:

EO Data

Haliaeetus leucocephalus

Element Occurence Map Label: **35195**

Element Subnational ID: 11331

EO Number: 417074

Common Name: Bald Eagle

Species of Concern (Y) / Potential Concern (W): **Y**

Description: Vertebrate Animal

First Observation Date:

Last Observation Date:

Natural Heritage Ranks:

State: S3

Global: G5

Federal Agency Status:

U.S. Fish & Wildlife Service: LT, PDL

U.S. Forest Service: THREATENED

U.S. Bureau of Land Management: SPECIAL STATUS

EO Rank:

EO Data

Montana Natural Heritage Program
Natural Resource Information System
Montana State Library
PO Box 201800
Helena, MT 59620-1800
(406) 444-3009 mtnhp@state.mt.us

Species of Concern Data Report

Thursday, July 19, 2007

Visit http://mtnhp.org for additional information.

Ammodramus bairdii

Element Occurence Map Label: 25763
Element Subnational ID: 13524
EO Number: 279542

Common Name: Baird's Sparrow
Species of Concern (Y) / Potential Concern (W): Y
Description: Vertebrate Animal
First Observation Date:
Last Observation Date:

Natural Heritage Ranks:

State: S2B
Global: G4

Federal Agency Status:

U.S. Fish & Wildlife Service:
U.S. Forest Service:
U.S. Bureau of Land Management: SENSITIVE

EO Rank:
EO Data

Tyto alba

Element Occurence Map Label: 30763
Element Subnational ID: 11560
EO Number: 18189

Common Name: Barn Owl
Species of Concern (Y) / Potential Concern (W): Y
Description: Vertebrate Animal
First Observation Date:
Last Observation Date:

Natural Heritage Ranks:

State: S1
Global: G5

Federal Agency Status:

U.S. Fish & Wildlife Service:
U.S. Forest Service:
U.S. Bureau of Land Management:

EO Rank:
EO Data

Apalone spinifera

Element Occurence Map Label: 40506
Element Subnational ID: 11382
EO Number: 8

Common Name: Spiny Softshell
Species of Concern (Y) / Potential Concern (W): Y
Description: Vertebrate Animal
First Observation Date:
Last Observation Date:

Natural Heritage Ranks:

State: S3
Global: G5

Federal Agency Status:

U.S. Fish & Wildlife Service:
U.S. Forest Service:
U.S. Bureau of Land Management: SENSITIVE

EO Rank:
EO Data

Ecological Information

BUFFALO MIRAGE

The geographic scope of your data search intersected an area for which the Natural Heritage Program databases have ecological information. Such information can be useful in assessing biological values and interpreting Species of Concern data. A summary is provided below of conditions at the time of site record creation.

BUFFALO MIRAGE

General Description

Buffalo Mirage is located in the bottomland of the Yellowstone River near its confluence with the Clark's Fork Yellowstone River in south central Montana. It occupies both high terraces and the river's active floodplain, including recent depositional bars. Except for high terraces, this area appears to have been inundated by the 100-year floods of 1996 and 1997. High terraces are a mix of cottonwood stands and areas converted to agricultural uses. The condition of the cottonwood communities varies, with stands on private land in the best condition. Terrace cottonwood communities on private land include narrowleaf cottonwood / skunkbush sumac (*Populus angustifolia / Rhus trilobata*) and narrowleaf cottonwood / western snowberry (*Populus angustifolia / Symphoricarpos occidentalis*). Both these communities have open canopies with well-developed shrub layers of skunkbush sumac and silver buffaloberry (*Shepherdia argentea*) or western snowberry. Kentucky bluegrass (*Poa pratensis*) dominates the herbaceous layer, although droughtier patches without woody cover retain low cover of western wheatgrass (*Pascopyrum smithii*). Both these communities have large, open, shrub-dominated patches.

Terraces on state land have patches of plains cottonwood (*Populus deltoides*) with well-developed skunkbush sumac and silver buffaloberry understories, but for the most part they are dominated by a plains cottonwood / mesic graminoids (*Populus deltoides* / mesic graminoids) grazing disclimax. Heavy grazing in this latter community has greatly reduced shrub diversity and cover and has facilitated the dominance of exotic pasture grasses. Russian olive (*Elaeagnus angustifolia*) forms a well developed mid-canopy through much of this community. More mesic areas in abandoned and overflow channels support communities of plains cottonwood / western snowberry (*Populus deltoides / Symphoricarpos occidentalis*), plains cottonwood / red-osier dogwood (*Populus deltoides / Cornus sericea*), and clustered field sedge (*Carex praegracilis*). The cottonwood communities support a diverse and well-developed shrub layer of western snowberry, skunkbush sumac, silver buffaloberry, golden currant (*Ribes aureum*), chokecherry (*Prunus virginiana*), yellow willow (*Salix lutea*), prickly rose (*Rosa acicularis*), western clematis (*Clematis ligusticifolia*), riverbank grape (*Vitis riparia*), and, in places, red-osier dogwood (*Cornus sericea*). As in the aforementioned terrace communities, exotics grasses, especially Kentucky bluegrass, dominate the herbaceous layer. There are limited patches of cottonwood regeneration (sapling-sized narrowleaf cottonwood) along an overflow channel.

Biological Significance

No state significant plants or animals were observed. Two uncommon plant communities, plains cottonwood / western snowberry (*Populus deltoides / Symphoricarpos occidentalis*) and plains cottonwood / red-osier dogwood (*Populus deltoides / Cornus sericea*), were documented in fair condition. Although these stands have high cover of exotic grasses, especially Kentucky bluegrass (*Poa pratensis*), the shrub layers are robust and diverse, making them high quality stands from a regional perspective.

Key Ecological Factors

Seasonal flooding and channel migration support these riparian communities and are necessary for their continued vigor and regeneration. The high flood events of 1996/1997 caused a realignment of the channel. Beaver (*Castor canadensis*) are causing localized but heavy cottonwood mortality in places. Grazing intensity is variable; however, past grazing may explain the absence of red-osier dogwood (*Cornus sericea*) from much of the area.

Exotic Species

Pasture grasses, especially Kentucky bluegrass (*Poa pratensis*), dominate the ground layer. Cheatgrass (*Bromus tectorum*) and meadow foxtail (*Alopecurus pratensis*) are locally abundant. Burdock species (*Arctium* sp.), Canada thistle (*Cirsium arvense*), hound's tongue (*Cynoglossum officinale*), common dandelion (*Taraxacum officinale*), and common tansy (*Tanacetum vulgare*) are present at low cover. Small populations of leafy spurge (*Euphorbia esula*) and tamarisk (*Tamarix chinensis*) are present in areas with fresh deposition from the 1996/1997 flood events. Russian olive (*Elaeagnus angustifolia*) is well established on the state land section, and saplings are encroaching on the private land portion of the area.

More detailed data on vegetation communities in this area may be available; if you are interested, contact Greg Kudray at (406) 444-0915 or gkudray@mt.gov

Ecological Information

BUFFALO MIRAGE

Other Values

Cottonwood stands have significant wildlife values. High quality stands with an intact native shrub understory are uncommon along the Yellowstone River in the study area, and those that remain have a high conservation value.

Management Information

Some of the most troublesome weeds, leafy spurge (*Euphorbia esula*), tamarisk (*Tamarix chinensis*), and Russian olive (Elaeagnus angustifolia) in places, are present at low cover and could be eradicated before they spread and become an intractable problem. The good grazing practices on the private land portion of the area should be encouraged to continue. The bottomlands along the Yellowstone River in this reach still retain patches (some large) of cottonwood stands. However, much of the high terrace has been converted to pasture and other agricultural uses. There is limited placement of revetment along portions of the channel. Except for this localized geomorphic modification, fluvial processes are intact.

Information Gaps

None were noted.

References

More detailed data on vegetation communities in this area may be available; if you are interested, contact Greg Kudray at (406) 444-0915 or gkudray@mt.gov

Ecological Information

YELLOWSTONE RIVER CORRIDOR

The geographic scope of your data search intersected an area for which the Natural Heritage Program databases have ecological information. Such information can be useful in assessing biological values and interpreting Species of Concern data. A summary is provided below of conditions at the time of site record creation.

YELLOWSTONE RIVER CORRIDOR

General Description

This Yellowstone River Corridor is located along the Yellowstone River in south central Montana. This area has a rich diversity of aquatic, riverine, wetland and adjacent upland habitats along the main-stem of the Yellowstone River from the Wyoming border to the confluence with the Bighorn River. Unlike most major rivers in the west, the Yellowstone River is free from major impoundments that have dramatically altered the hydrologic regime. The Yellowstone is characterized as a relatively free-flowing river. The intact hydrology and river dynamics give rise to important cottonwood floodplain communities. The aquatic environments include both cold water and warm water species. Adjacent uplands (within the 1 kilometer buffer) include benches, slopes, cliffs, rock outcrops and historic river-bottom that support shrublands of sagebrush (all three subspecies of *Artemisia tridentata*), grasslands consisting of bluebunch wheatgrass, and woodlands of primarily ponderosa pine (*Pinus ponderosa*).

Biological Significance

The Yellowstone River Corridor contains a diverse environment. In the headwaters near the Wyoming border, the river corridor includes habitat for grizzly bear (*Ursus arctos horribilis*), Canada lynx (*Lynx canadensis*), and gray wolf (*Canis lupus*). Cold water aquatic environments support Yellowstone cutthroat trout (*Oncorhynchus clarki bouvieri*). Downstream warm water aquatic species include pallid sturgeon (*Scaphirhynchus albus*), paddlefish (*Polyodon spathula*), blue sucker (*Cycleptus elongatus*), the sicklefin chub (*Hybopsis meeki*) and sturgeon chub (*Macrhybopsis gelida*).
River and floodplain habitats are very important ecologically; three species of cottonwoods, narrowleaf cottonwood (*Populus angustifolia*), black cottonwood (*Populus balsamifera spp. trichocarpa*) and plains cottonwood (*Populus deltoides*) occur in gallery forests and terraces and provide habitat for nesting, wintering and migrating bald eagle (*Haliaeetus leucocephalus*) and rookery sites for blue heron. Channel gravel and sandbars provide habitat for spiny softshell (*Trionyx spiniferus*) and persistent-sepal yellowcress (*Rorippa calcyina*), although this species has not been relocated in recent years. Riparian communities include the state significant plants beaked spikerush (*Eleocharis rostellata*) and Schweinitz's flatsedge (*Cyperus schweinitzii*). Notable shorebirds recorded from this stretch include the Interior Least Tern (*Sterna antillarum athalassos*). Two reptiles, the western hognose snake (*Heterodon nasicus*) and milk snake (*Lampropeltis triangulum*) have been reported from the river corridor.

Key Ecological Factors

Seasonal flooding is the principal process facilitating the establishment and regeneration of cottonwood forests and riparian communities. Consequently, the process of seasonal flooding has direct implications to the numerous plant and animal species occurring within the river corridor.

Exotic Species

There are infestations of numerous exotic plant species and populations of exotic fish species. Non-native salmonid species compete and / or hybridize with the Yellowstone cutthroat trout (*Oncorhynchus clarki bouvieri*).

Other Values

The Yellowstone River is a relatively free flowing river, restricted only by the occasional riprap along the banks and numerous irrigation diversions and pumping stations. This area captures nesting and foraging habitats of a plethora of species associated with the river and its floodplain.

Management Information

Agriculture, rural and urban developments and subsequent bank stabilization activities take place along the corridor. Diversions and dams for irrigation canals exit along the main stem and tributaries of the upper Yellowstone River. Irrigation is the major water use. Both irrigation and municipal use of groundwater have increased since 1970, and over 7,000 new wells have been drilled within 5 miles of either side of the bank along the upper Yellowstone River in Montana (MT Bureau of Mines and Geology Wells database).

More detailed data on vegetation communities in this area may be available; if you are interested, contact Greg Kudray at (406) 444-0915 or gkudray@mt.gov

Ecological Information

YELLOWSTONE RIVER CORRIDOR

Information Gaps

An assessment of the health, population structure and age of cottonwoods along islands in the main channel would quantify the dynamics of cottonwood and channel bar establishment.

References

Appendix C: Farmland Conversion Impact Rating for Corridor Type Projects

U.S. DEPARTMENT OF AGRICULTURE
Natural Resources Conservation Service

NRCS-CPA-106
(Rev. 1-91)

FARMLAND CONVERSION IMPACT RATING FOR CORRIDOR TYPE PROJECTS

PART I ***(To be completed by Federal Agency)***	3. Date of Land Evaluation Request 7/16/06	4. Sheet 1 of 2
1. Name of Project Rockvale to Laurel	5. Federal Agency Involved FHWA	
2. Type of Project Highway Corridor	6. County and State Yellowstone and Carbon Counties	
PART II ***(To be completed by NRCS)***	1. Date Request Received by NRCS 7/15/06	2. Person Completing Form Tony Rolfes/Valerie Robertson
3. Does the corridor contain prime, unique statewide or local important farmland? (If no, the FPPA does not apply - Do not complete additional parts of this form). YES ☑ NO ☐		4. Acres Irrigated 112000/45567 — Average Farm Size 1072/1226
5. Major Crop(s) hay, barley, wheat, beets, corn, alphalfa	6. Farmable Land in Government Jurisdiction Acres: 1397361 % 25	7. Amount of Farmland As Defined in FPPA Acres: 558569 % 25
8. Name Of Land Evaluation System Used LESA	9. Name of Local Site Assessment System NA	10. Date Land Evaluation Returned by NRCS 8/24/06

		Alternative Corridor For Segment			
PART III ***(To be completed by Federal Agency)***		Corridor 1	Corridor 2	Corridor 3A	Corridor 3B
A. Total Acres To Be Converted Directly		344	338	315	310
B. Total Acres To Be Converted Indirectly, Or To Receive Services					
C. Total Acres In Corridor		344	338	315	310
PART IV ***(To be completed by NRCS) Land Evaluation Information***					
A. Total Acres Prime And Unique Farmland		126	111	93	117
B. Total Acres Statewide And Local Important Farmland		61	107	51	53
C. Percentage Of Farmland in County Or Local Govt. Unit To Be Converted		0	0	0	0
D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value		30	30	40	36
PART V ***(To be completed by NRCS) Land Evaluation Information Criterion Relative value of Farmland to Be Serviced or Converted (Scale of 0 - 100 Points)***		41	41	37	39
PART VI ***(To be completed by Federal Agency) Corridor Assessment Criteria (These criteria are explained in 7 CFR 658.5(c))***	Maximum Points				
1. Area in Nonurban Use	15	14	14	14	14
2. Perimeter in Nonurban Use	10	9	9	9	9
3. Percent Of Corridor Being Farmed	20	8	9	13	12
4. Protection Provided By State And Local Government	20	8	8	8	8
5. Size of Present Farm Unit Compared To Average	10	0	0	0	0
6. Creation Of Nonfarmable Farmland	25	9	10	5	5
7. Availablility Of Farm Support Services	5	5	5	5	5
8. On-Farm Investments	20	8	10	5	5
9. Effects Of Conversion On Farm Support Services	25	0	0	0	0
10. Compatibility With Existing Agricultural Use	10	2	8	4	2
TOTAL CORRIDOR ASSESSMENT POINTS	160	63	73	63	60
PART VII ***(To be completed by Federal Agency)***					
Relative Value Of Farmland (From Part V)	100	50	50	47	48
Total Corridor Assessment (From Part VI above or a local site assessment)	160	63	73	63	60
TOTAL POINTS *(Total of above 2 lines)*	260	113	123	110	108

1. Corridor Selected:	2. Total Acres of Farmlands to be Converted by Project:	3. Date Of Selection:	4. Was A Local Site Assessment Used?
5B	unknown	2/14/03	YES ☐ NO ☑

5. Reason For Selection:

See letter dated 7/10/06

Signature of Person Completing this Part: JOSEPH GUENTHER, AICP
ENVIRONMENTAL PLANNER

DATE 10/19/07

NOTE: Complete a form for each segment with more than one Alternate Corridor

U.S. DEPARTMENT OF AGRICULTURE
Natural Resources Conservation Service

NRCS-CPA-106
(Rev. 1-91)

FARMLAND CONVERSION IMPACT RATING FOR CORRIDOR TYPE PROJECTS

PART I ***(To be completed by Federal Agency)***	3. Date of Land Evaluation Request: 7/16/06 — 4. Sheet [illegible] of 2 of 2
1. Name of Project: **Rockvale to Laurel**	5. Federal Agency Involved: **FHWA**
2. Type of Project: **Highway Corridor**	6. County and State: **Yellowstone and Carbon Counties**
PART II ***(To be completed by NRCS)***	1. Date Request Received by NRCS: **7/15/06** — 2. Person Completing Form: **Tony Rolfes/Valerie Robertson**
3. Does the corridor contain prime, unique statewide or local important farmland? (If no, the FPPA does not apply - Do not complete additional parts of this form). YES ☑ NO ☐	4. Acres Irrigated: **112000/45567** — Average Farm Size: **1072/1226**
5. Major Crop(s): **hay, barley, wheat, beets, corn, alphalfa** — 6. Farmable Land in Government Jurisdiction: Acres: **1397361** % **25**	7. Amount of Farmland As Defined in FPPA: Acres: **558569** % **25**
8. Name Of Land Evaluation System Used: **LESA** — 9. Name of Local Site Assessment System: **NA**	10. Date Land Evaluation Returned by NRCS: **8/24/06**

PART III ***(To be completed by Federal Agency)***	Maximum Points	Alternative Corridor For Segment: Corridor 5A	Corridor 5B	Corridor C	Corridor D
A. Total Acres To Be Converted Directly		343	334		
B. Total Acres To Be Converted Indirectly, Or To Receive Services					
C. Total Acres In Corridor		343	334	0	0
PART IV ***(To be completed by NRCS) Land Evaluation Information***					
A. Total Acres Prime And Unique Farmland		127	114		
B. Total Acres Statewide And Local Important Farmland		102	107		
C. Percentage Of Farmland in County Or Local Govt. Unit To Be Converted		0	0	0	0
D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value		30	30		
PART V ***(To be completed by NRCS) Land Evaluation Information Criterion Relative value of Farmland to Be Serviced or Converted (Scale of 0 - 100 Points)***		43	44		
PART VI ***(To be completed by Federal Agency) Corridor Assessment Criteria (These criteria are explained in 7 CFR 658.5(c))***	**Maximum Points**				
1. Area in Nonurban Use	15	14	14		
2. Perimeter in Nonurban Use	10	9	9		
3. Percent Of Corridor Being Farmed	20	8	7		
4. Protection Provided By State And Local Government	20	8	8		
5. Size of Present Farm Unit Compared To Average	10	0	0		
6. Creation Of Nonfarmable Farmland	25	8	8		
7. Availablility Of Farm Support Services	5	5	5		
8. On-Farm Investments	20	8	8		
9. Effects Of Conversion On Farm Support Services	25	0	0		
10. Compatibility With Existing Agricultural Use	10	3	3		
TOTAL CORRIDOR ASSESSMENT POINTS	160	63	62	0	0
PART VII ***(To be completed by Federal Agency)***					
Relative Value Of Farmland (From Part V)	100	51	51		
Total Corridor Assessment (From Part VI above or a local site assessment)	160	63	62	0	0
TOTAL POINTS *(Total of above 2 lines)*	260	114	113	0	0

1. Corridor Selected:	2. Total Acres of Farmlands to be Converted by Project:	3. Date Of Selection:	4. Was A Local Site Assessment Used?
5B	**unknown**	**2/14/03**	YES ☐ NO ☑

5. Reason For Selection:

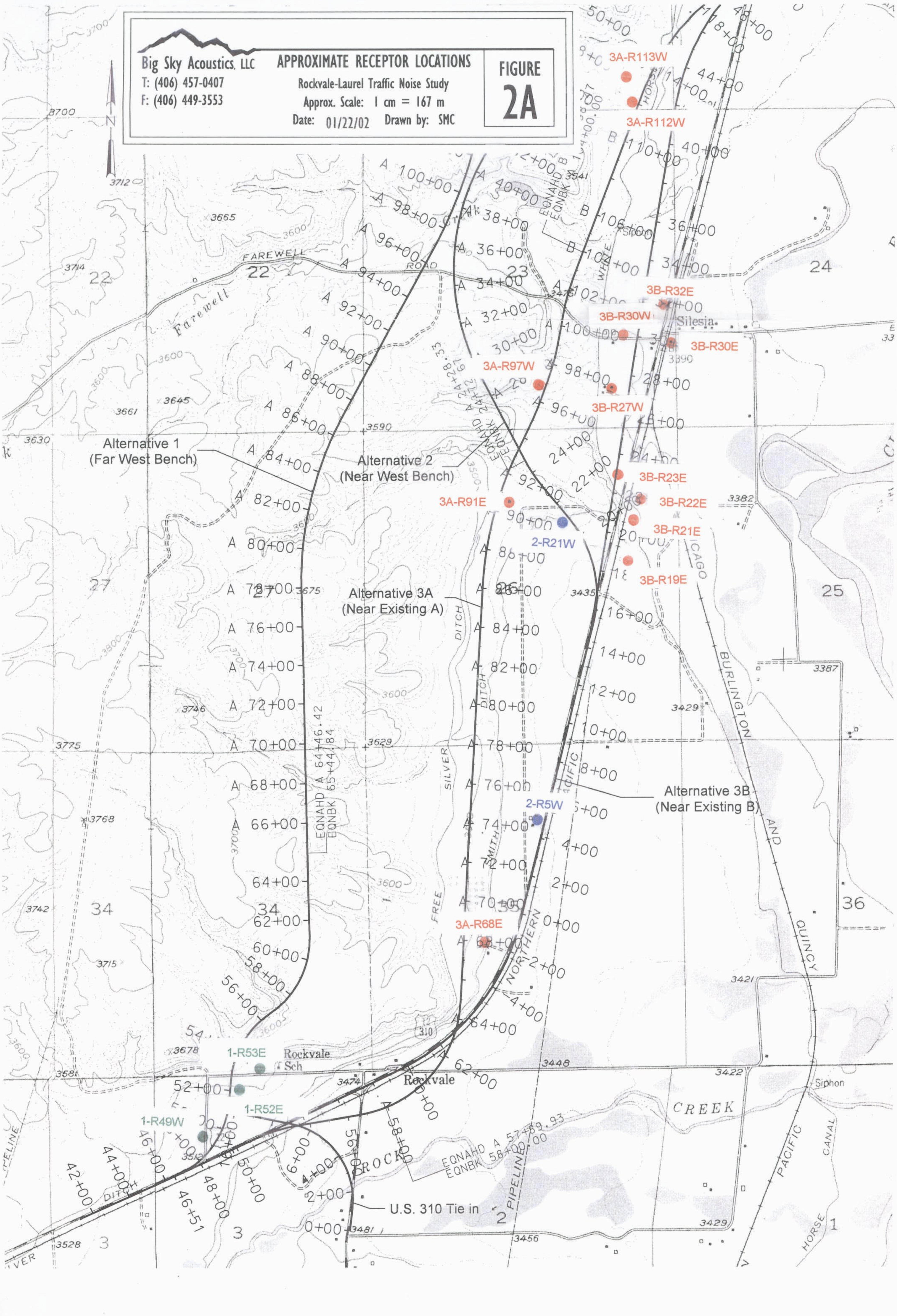
See letter dated 7/10/06

Signature of Person Completing this Part: JOSEPH GUENTHER, AICP
ENVIRONMENTAL PLANNER

DATE 10/19/07

NOTE: Complete a form for each segment with more than one Alternate Corridor

Appendix D: Noise Figures



Big Sky Acoustics, LLC
T: (406) 457-0407
F: (406) 449-3553

APPROXIMATE RECEPTOR LOCATIONS
Rockvale-Laurel Traffic Noise Study
Approx. Scale: 1 cm = 167 m
Date: 01/22/02 Drawn by: SMC

FIGURE 2A

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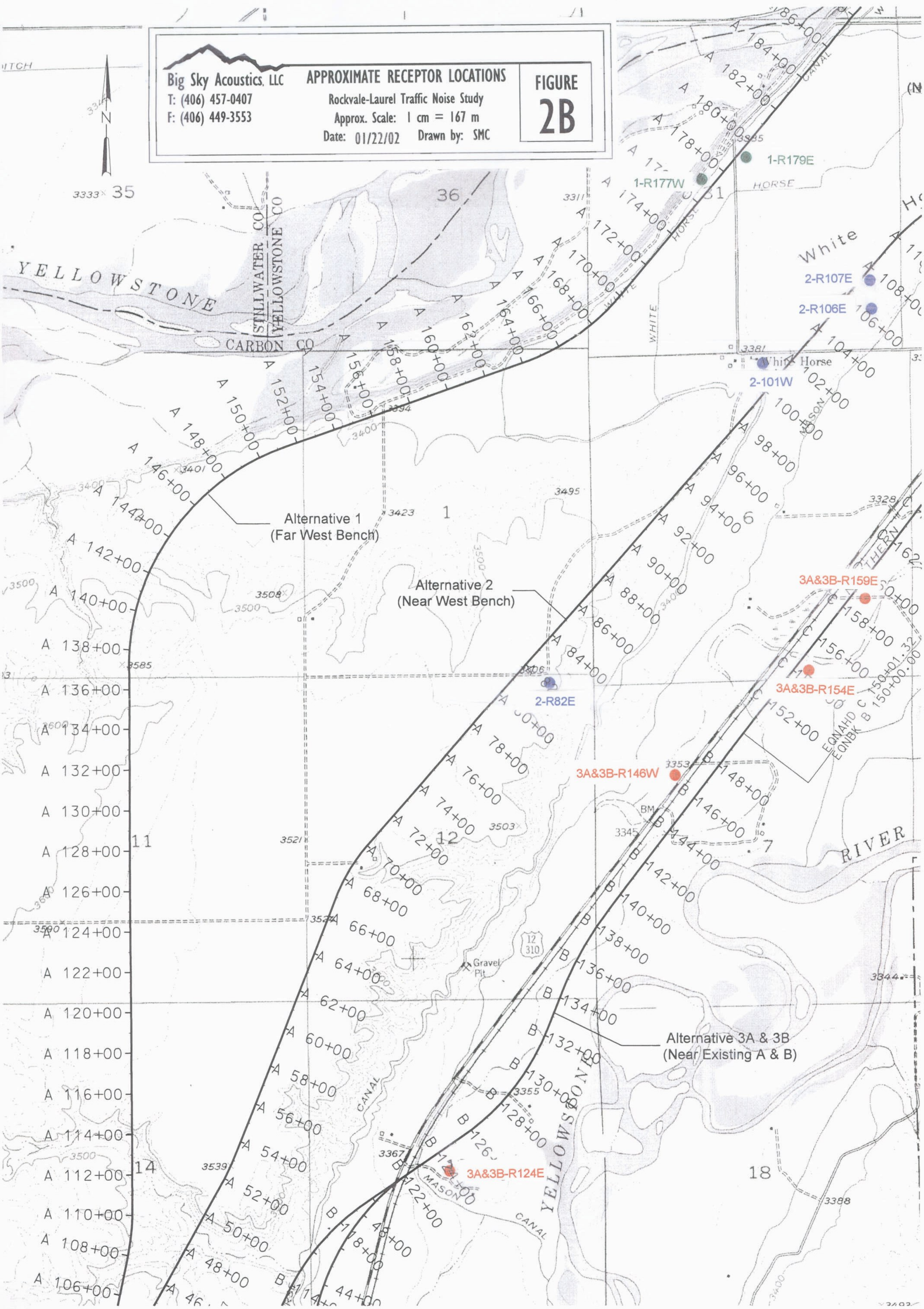

Big Sky Acoustics, LLC
T: (406) 457-0407
F: (406) 449-3553
APPROXIMATE RECEPTOR LOCATIONS
Rockvale-Laurel Traffic Noise Study
Approx. Scale: 1 cm = 167 m
Date: 01/22/02 Drawn by: SMC
FIGURE 2B
Alternative 1 (Far West Bench)
Alternative 2 (Near West Bench)
Alternative 3A & 3B (Near Existing A & B)
1-R177W
1-R179E
2-R107E
2-R106E
2-101W
2-R82E
3A&3B-R159E
3A&3B-R154E
3A&3B-R146W
3A&3B-R124E
YELLOWSTONE
STILLWATER CO
YELLOWSTONE CO
CARBON CO
White Horse
RIVER
Gravel Pit
MASON
CANAL

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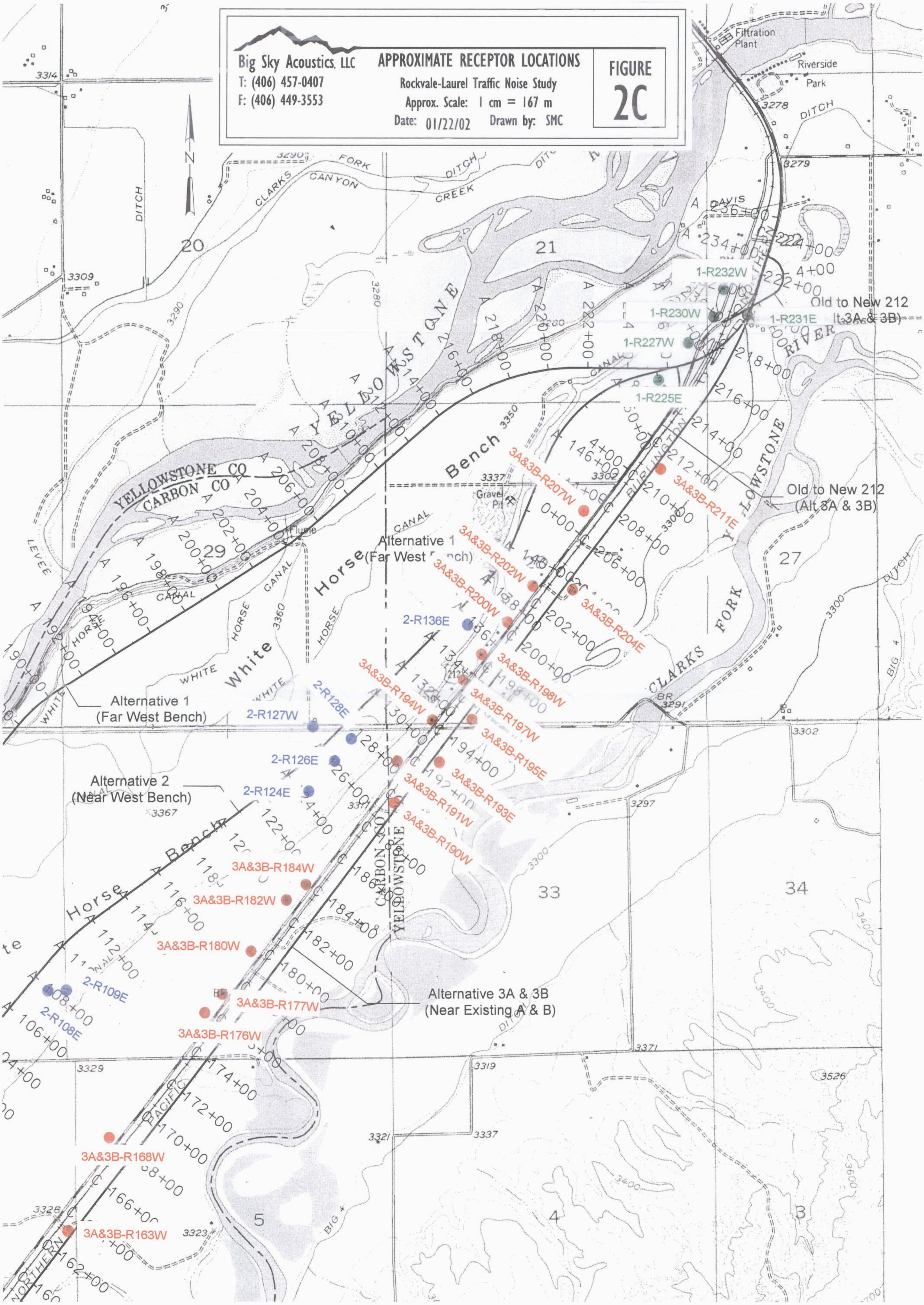

Big Sky Acoustics, LLC
T: (406) 457-0407
F: (406) 449-3553
APPROXIMATE RECEPTOR LOCATIONS
Rockvale-Laurel Traffic Noise Study
Approx. Scale: 1 cm = 167 m
Date: 01/22/02 Drawn by: SMC
FIGURE
2C
N
Filtration Plant
Riverside Park
DITCH
YELLOWSTONE
CLARKS FORK
RIVER
YELLOWSTONE CO
CARBON CO
White Horse Bench
CANAL
LEVEE
Gravel Pit
1-R232W
1-R230W
1-R231E
1-R227W
1-R225E
Old to New 212 (It 3A & 3B)
Old to New 212 (Alt 3A & 3B)
3A&3B-R207W
3A&3B-R211E
3A&3B-R202W
3A&3B-R204E
3A&3B-R200W
3A&3B-R198W
3A&3B-R197W
3A&3B-R195E
3A&3B-R194W
3A&3B-R193E
3A&3B-R191W
3A&3B-R190W
3A&3B-R184W
3A&3B-R182W
3A&3B-R180W
3A&3B-R177W
3A&3B-R176W
3A&3B-R168W
3A&3B-R163W
2-R136E
2-R128E
2-R127W
2-R126E
2-R124E
2-R109E
2-R108E
Alternative 1 (Far West Bench)
Alternative 2 (Near West Bench)
Alternative 3A & 3B (Near Existing A & B)
20
21
27
29
33
34
5
4
3

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Appendix E: Section 404(b)(1) Evaluation

404(b)(1) Evaluation

US 212 Reconstruction Rockvale to Laurel

Montana Department of Transportation
Project Number NH-4-1(21)42
Control Number 4070

Prepared for

Montana Department of Transportation

March 2005
Revised February 2007

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Introduction

The 404(b)(1) Guidelines are described in 40 CFR 230. They represent criteria to use when evaluating discharges of fill or dredge material into jurisdictional wetlands or waters of the U.S., under Section 404 of the Clean Water Act. As stated in Subpart A, "…dredged or fill material should not be discharged into the aquatic system, unless it can be demonstrated that such a discharge will not have an unacceptable adverse impact either individually or in combination with known and/or probable impacts of other activities affecting the ecosystems of concern."

In order to comply with these guidelines, the following conditions must be met (Subpart B Section 230.10):

a) Except as provided under Section 404(b)(2), no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences.

b) No discharge of dredged or fill material shall be permitted if it violates State water quality standards, Section 307 of the Clean Water Act, the Endangered Species Act of 1973, or marine sanctuary designated under Title III of the Marine Protection, Research, and Sanctuaries Act of 1972.

c) Except as provided under Section 404(b)(2) no discharge of dredged or fill material shall be permitted which will cause or contribute to significant degradation of the waters of the U.S.

d) Except as provided under Section 404(b)(2), no discharge of dredged or fill material shall be permitted unless appropriate and practicable steps have been taken which will minimize potential adverse impacts of the discharge on the aquatic ecosystem.

Mitigation to compensate for unavoidable adverse impacts can be used to bring a project into compliance with these guidelines. Impacts must first be avoided to the extent practicable; then, remaining unavoidable adverse impacts must be mitigated by minimizing impacts to the extent practicable, and then by finally compensating for lost aquatic resource functions and values.

Factual determinations in eight categories must be made in writing in order to consider whether a discharge satisfies the above conditions (Subpart B, Section 230.11). The determinations are contained within this report.

Project Description

Location

US 212 is a principal arterial designated as Route N4 on the National Highway System in south-central Montana (Figure E-1). It serves as the local connection between the communities of Rockvale and Silesia and the City of Laurel. It is also the main northeasterly highway from the Red Lodge and Yellowstone National Park recreation areas. The 18-kilometer (11 miles) proposed project is located between reference (mile) posts 42.65 and 53.85 (Figure E-1). The existing highway runs in between the Yellowstone River and the Clarks Fork Yellowstone River in a valley surrounded by grassland-dominated rolling hills.

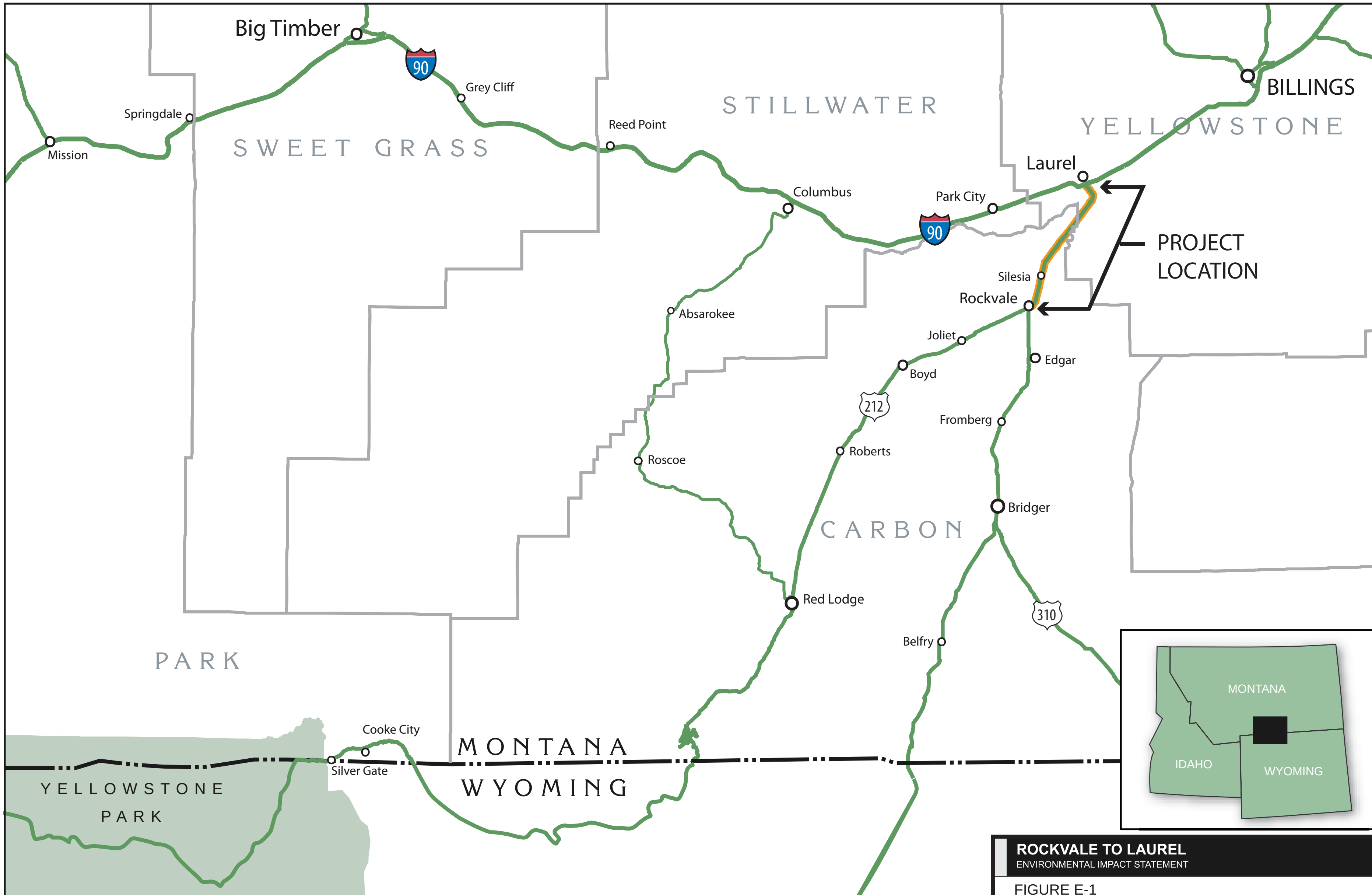
General Description

A Draft Environmental Impact Statement (DEIS) is being prepared for the project concurrent with this document. The DEIS examines a No-Build Alternative and six Build Alternative alignments for reconstructing the highway, and also identifies potential environmental effects (Figure E-2). The DEIS is in preliminary form and will be submitted to cooperating agencies for review and comment prior to submission for public review. The Preferred Alternative (Alternative 5B) has been identified and is the alternative evaluated in this 404(b)(1) analysis. The alternatives addressed in the DEIS include:

- No Build Alternative
- Alternative 1 – Far West Bench
- Alternative 2 – Near West Bench
- Alternative 3A – Near Existing Alignment
- Alternative 3B – Near Existing Alignment
- Alternative 5A – Combined West Bench
- Alternative 5B – Combined West Bench

Alternative 5B (Preferred Alternative) follows the existing alignment for approximately 1.6 kilometers (1 mile) and then turns northwesterly through irrigated farmland. The new alignment climbs onto the west bench and proceeds northeasterly until it rejoins the existing alignment near the northern end of the project limits. The new alignment proposes 2 travel lanes in either direction for a 4-lane facility. The proposed highway alignment was shifted in certain locations to avoid or minimize wetland impacts; alternative construction techniques, such as steeper slopes to minimize fill, were used in other locations to avoid or minimize wetland impacts. Table E-1 shows the proposed realignments or construction changes used to avoid or minimize wetland impacts.

T102005002BOI figE-1_ProjLocMap 07-16-2006



ROCKVALE TO LAUREL
ENVIRONMENTAL IMPACT STATEMENT

FIGURE E-1
PROJECT LOCATION MAP

T022002003BOI

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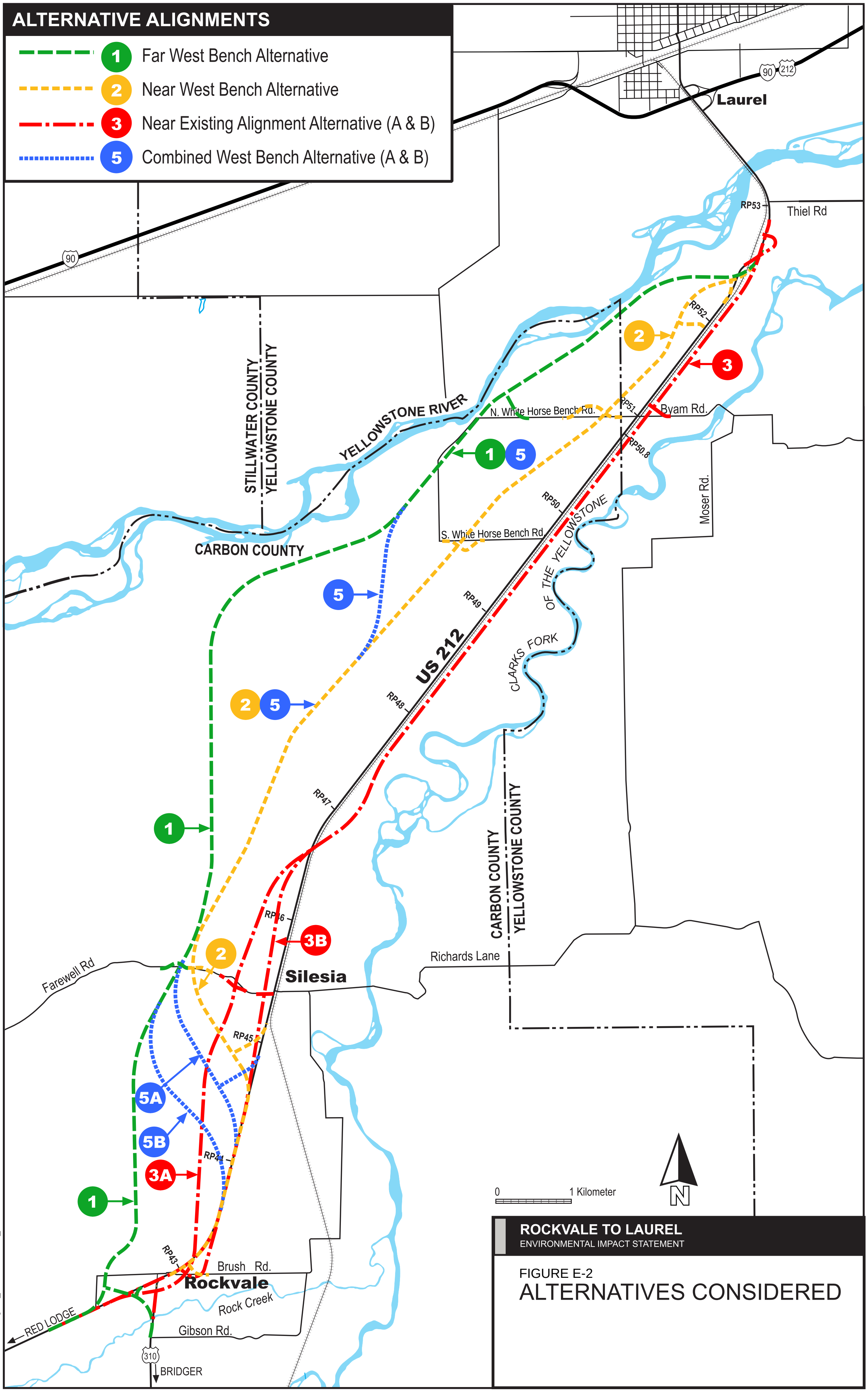

ROCKVALE TO LAUREL
ENVIRONMENTAL IMPACT STATEMENT

FIGURE E-2
ALTERNATIVES CONSIDERED

T10200502BOI FigE-2_AltsConsidered_rev3.ai 06-18-2006

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To comply with Section 404(b)(1), all alignment alternatives for the proposed project were laid out on paper and then staked in the field. Preliminary wetland delineations and evaluations using the Montana Department of Transportation's (MDT's) Montana Wetland Assessment Method (MWAM) were then completed along all alignments. Those areas of alignments with wetland impacts were adjusted to avoid as many impacts as possible. Within Alternative 1, the relocation of US 310 was adjusted to minimize impacts to Wetland 5. Alternative 2 was adjusted to minimize impacts to Wetland 3. Alternative 3A was adjusted to minimize impacts to Wetland 17. Alignment adjustments were considered for Wetlands 18, 19, and 21, but abandoned because of the proximity of paralleling canals. Adjustments to combined Alternatives 3A and 3B were considered and rejected because the impacts were minor and not certain to occur for Wetlands 9, 11, and 12. Alternatives 5A and 5B were located after the initial wetland delineation. These alternatives were specifically located to avoid impacts to Wetlands 18 and 19. Alternative 5B was located to minimize impacts to Wetland 17. It was not possible to avoid impacts to Wetland 5 because it is located at the start of most of the alternatives at the location where the new alignment will be tied into the existing alignment, and where the roadbed will be widened at that point.

TABLE E-1
Aquatic Resource Avoidance/Minimization Realignments and Other Measures

Wetland	Problem Statement	Proposed Adjustment	Associated Waterbody	Approximate Wetland Impact Avoided
WL3	Desired to avoid wetland	Alternative 2 alignment was moved west and adjusted fill slopes to 3:1	Farewell Creek	0.2 ha
WL5	Needed to avoid the wetland when moving US 310	US 310 relocation was moved to miss the wetland	Smith Ditch	0.1 ha
WL17	Needed to avoid splitting wetland into 2 sections	Adjusted curve radius to put impacts on one side of wetland only	Free Silver Ditch	Not measurable
WL18	Needed to shift Alternative 5B south to transition off bench	Moved Alternative 5B to a location between WL18 and WL19	Free Silver Ditch	0.5 ha
WL19	Needed to shift Alternative 5B south to transition off bench	Moved Alternative 5B to a location between WL18 and WL19	Free Silver Ditch	0.6 ha
Clarks Fork Yellowstone River	Crossed the River in two locations	Dropped Alternative	Clarks Fork Yellowstone River	Not determined

Alternative 4 will cross the Clarks Fork Yellowstone River twice. The lack of public support and the potential for substantial environmental impacts resulted in removing this alternative from further consideration. Potentially substantial impacts on jurisdictional wetlands and waters of the U. S. were avoided when this alternative was dropped.

Authority and Purpose

MDT proposes the reconstruction of a 18-kilometer segment of US 212. Safety concerns and anticipated capacity needs compelled MDT to request funding from the Federal Highway Administration (FHWA) to evaluate the environmental effects of reconstructing this segment of US 212.

The following is a brief summary of the purpose and need for the proposed project:

- The **purpose** of the proposed project is to:
- Improve safety for all local and regional traffic needs;
- Accommodate long-term capacity needs for the local and regional travelers over the next 20 years and beyond using prudent planning principles;
- Improve the transportation system linkages by defining, preserving, and providing a corridor to accommodate the variety of transportation needs along US 212 including local circulation and access for residents with existing access needs; and
- Support mobility of goods and people connecting I-90 with rural communities of Silesia, Rockvale, Red Lodge, and Bridger, and Wyoming destinations.

The following critical **needs** for improving the US 212 transportation corridor between Laurel and Rockvale have been identified:

- There is conflict between local and regional traffic needs, such as slow versus faster travel desires; sight-seeing versus destination oriented driving; and frequent stops versus through connectivity with other portions of the National Highway System (NHS);
- Points of access, such as driveways and local roadways connecting to US 212, and stationary objects are the most frequent location of accidents;
- Accidents involving truck traffic are more than double the state average of similar roadways in Montana;
- The existing 2-lane US 212 is undersized to carry anticipated traffic volumes in the next 20 years and beyond;
- There is inadequate cueing distance between US 212 and railroad crossings; and
- Residential development and other physical features constrain the opportunity to widen the existing right-of-way within the project area.

General Description of the Dredged or Fill Material

General Characteristics of Material

Any fill placed into wetlands is likely to be some sort of AASHTO-approved fill material excavated from local sources. It would therefore be similar in chemical and physical characteristic to the soil directly below the highly organic wetland substrates. Borrow sites will be chosen to not contain toxic materials, high salinity levels, heavy metals, acid-generating substances, or any material potentially harmful to fish, wildlife, or other aquatic organisms. In general, fill materials would be expected to be earth and crushed or naturally occurring sand and gravel. However, steel or concrete could be used as fill for construction of bridges or culverts. Rock riprap may be used as an erosion control measure where flowing water could erode around project facilities.

Quantity of Material

The amount of fill used at each location would be dependent on the topography of the affected wetland and type of fill needed (such as soil, steel, or concrete). Quantities will be determined during the final design phase. The quantity will be sufficient to build the project.

Source of Material

The locations of source materials for fill will be determined as part of the final design. No location would be chosen if it has toxic materials, high salinity levels, heavy metals, acid-generating substances, or any material potentially harmful to fish, wildlife, or other aquatic organisms. Borrow site development would not affect any cultural or historic resource, threatened or endangered species, or aquatic resource.

Description of the Proposed Discharge Sites

A consulting firm, CH2M HILL, prepared a Biological Resources Report for the proposed project (CH2M HILL 2003). The report describes the methodology used to identify wetlands and documents the location, size, and type of wetlands found in the project area. Table E-2 presents a summary of wetland characteristics for wetlands located within the project area. Figure E-3 shows the location of all wetlands in the project area. Only wetlands along the proposed route of Alternative 5B were formally delineated in the field from August 12 to August 15, 2003, using the 1987 U.S. Army Corps of Engineers' (COE) *Wetlands Delineation Manual (*COE 1987). Boundaries of the other wetlands shown on Figure E-3 were identified in the field, but not formally delineated, and transferred to project maps. The MWAM was used to identify the wetland functional value of each wetland (Berglund 1999).

Location of Sites

Wetlands and waters of the U.S. impacted by the Preferred Alternative are located in the Clarks Fork Yellowstone River drainage basin. A total of 25 wetlands (includes 2 streams) and

5 jurisdictional canals were identified in the project area. Of these, 3 wetlands and 4 canals would be impacted by the Preferred Alternative. Figure E-3 shows the location of all wetlands.

Size of Sites

The total size of the wetlands to be impacted by the Preferred Alternative range from 0.1 to 0.9 hectares based on a delineation using the 1987 Wetland Delineation Manual. Table E-3 summarizes the wetlands impacted by the Preferred Alternative and indicates both the size of the entire wetland and the amount of each wetland likely to be impacted. The final number of wetland acres that would be impacted would be determined during final design, but is not expected to vary substantially from the estimates provided in Table E-3.

Type of Sites

The impacted wetlands fall into two hydrogeomorphic categories: small riverine systems and depressional systems. Depressional wetlands are most common. Riverine systems are wetlands associated with rivers or streams. Depressional systems are formed in depressions and are fed by surface or ground water. With one exception (WL 14), all affected depressional wetlands are supported by irrigation water runoff or groundwater.

Types of Wetland Habitats

Table E-3 shows the type of each wetland to be impacted by the Preferred Alternative.

TABLE E-3
Wetlands to be Impacted by the Preferred Alternative (5B), Combined West Bench Alternative

Wetland ID	Wetland Type (after Cowardin)[1]	State Classification [2]	Affected Area (ha)
WL5	PEM & PSS	III	0.5
WL13	PEM & PFO	IV	0.1
WL14	PEM & PSS & PFO	I	0.1
		Wetland Subtotal	**0.6**
White Horse Canal	Water of the U.S.	NA	0.9
Davis Ditch	Water of the U.S.	NA	0.1
Smith Ditch	Water of the U.S.	NA	0.1
Free Silver Ditch	Water of the U.S.	NA	0.1
		Canal Subtotal	**1.1**
		Total	**1.8**

[1]Cowardin wetland types: PFO = palustrine forested, PSS = palustrine shrub/scrub, PEM = palustrine emergent

[2]I = wetlands that are exceptionally high quality and are rare to uncommon; III = wetlands that are more common, generally less diverse, and smaller and more isolated than II; IV = wetlands that are small, isolated, and lack vegetative diversity

TABLE E-2
Summary of Wetlands Within the US 212 Rockvale to Laurel Project Area, Including Data Collected Using MDT's Montana Wetland Assessment Method[a]

Impacted (Alt.)[b]	Wetland ID	Area ha (ac)	Wetland Type[c]	Vegetative Layer	Primary Species	Wetland Indicator Status for Listed Primary Species[d]	Weed Species Noted In or Adjacent to Wetland Areas	Overall Analysis Rating[e]	Functional Value Rating (%)	Functional Units[f] (ha [ac])	Primary Functions Values	Jurisdictional Wetland Status[g]	Description
Yes (1)	WL1	0.8 ha (2.0 ac)	PFO	Tree	Black cottonwood (*Populus trichocarpa*)	FAC		I	60%	4.8 ha (12.0 ac)	General wildlife habitat. Groundwater discharge/recharge. Uniqueness value given for large, old, deciduous trees.	J	Non-isolated spring feeding floodplain wetlands along the Yellowstone River.
					Plains cottonwood (*Populus deltoides* var. *occidentalis*)	FACW							
					Box elder (*Acer negundo*)	FAC							
					Chokecherry (*Prunus virginiana*)	FACU							
Yes (2)	WL2	0.2 ha (0.5 ac)	PSS	Herb	Kentucky bluegrass (*Poa pratensis*)	FAC		I	46%	0.8 ha (2.0 ac)	Montana Natural Heritage Program species potential habitat. General wildlife habitat. Sediment/nutrient/toxicant removal. Uniqueness.	J	Depression (open surface).
					Stinging nettle (*Uritic dioica*)	FACW							
					Arrowleaf groundsel (*Senecio triangularis*)	OBL							
				Shrub	Sandbar willow (*Salix exigua*)	OBL							
				Tree	Peachleaf willow (*Salix amygdaloides*)	FACW							
Yes (2)	WL3	0.2 ha (0.5 ac)	RUB	Herb	Baltic rush (*Juncus balticus*)	OBL	Canada thistle (*Circium arvense*)	III	46%	1.4 ha (3.5 ac)	Montana Natural Heritage Program species potential habitat. Flood attenuation. Short- and long-term surface water storage. Sediment/nutrient/toxicant removal. Production export/food chain support.	J	Young system/ stream bed continually receiving and depositing silt from adjacent farmland into lake (unconsolidated bottom).
					Kentucky bluegrass	FACU	Tumble mustard (*Sisymbrium altissimum*)						
					Low northern sedge (*Carex concinna*)	FACU	Flixweed (*Descurainia sophia*)						
					Creeping spikerush (*Eleocharis palustris*)	OBL	Morning glory (*Convolvulus arvensis*)						
Yes (2)	WL4	0.4 ha (1.0 ac)	PEM	Herb	Broad-leaf cattail (*Typha latifolia*)	OBL	Canada thistle	IV	18%	0.7 ha (1.5 ac)	Sediment/nutrient/toxicant removal. Dynamic surface water storage.	J	PEM-system: depression (open surface). Irrigation return seep.
					Wild licorice (*Glycyrrhiza lepidota*)	FAC-	Tumble mustard						
					Western dock (*Rumex occidentalis*)	OBL	Common hound's tongue (*Cynoglossum officinale*)						
					Macoun's buttercup (*Ranunculus macounii*)	OBL	Bur chervil (*Anthriscus caucalis*)						
Yes (2, 3B, 5A, 5B [Preferred])	WL5	1.8 ha (4.5 ac)	PEM & PSS	Herb	Broad-leaf cattail	OBL	Climbing nightshade (*Solanum dulcamara*)	III	37%	6.2 ha (15.5 ac)	Short- and long-term surface water storage.	J	Depression (open surface). Canal leakage.
					Common reed (*Phragmites australis*)	FACW+							
					Three-square bulrush (*Scirpus pungens*)	OBL							
				Shrub	Clasping-leaf dogbane (*Apocynum cannabinum*)	FAC							
				Tree	Sandbar willow	OBL							
					Box elder	FACW							
Yes (2)	WL6	0.1 ha (<0.5 ac)	PEM	Herb	Broad-leaf cattail	OBL	Climbing nightshade	IV	13%	0.3 ha (0.5 ac)	Groundwater discharge/recharge.	J	Depression (open surface).
					Nebraska sedge (*Carex nebrascensis*)	OBL	Field pennycress (*Thlaspi arvense*)						
					Baltic rush	OBL	Tumble mustard						
Yes (3A)	WL7	<0.1 ha (<0.5 ac)	PEM	Herb	Broad-leaf cattail	OBL	Canada thistle	III	21%	0.1 ha (<0.5 ac)	General wildlife.	NJ	Depression (open surface). Roadside ditch.
					Asparagus (*Asparagus* sp.)	NI	Climbing nightshade				Production export/food chain support.		

TABLE E-2
Summary of Wetlands Within the US 212 Rockvale to Laurel Project Area, Including Data Collected Using MDT's Montana Wetland Assessment Method[a]

Impacted (Alt.)[b]	Wetland ID	Area ha (ac)	Wetland Type[c]	Vegetative Layer	Primary Species	Wetland Indicator Status for Listed Primary Species[d]	Weed Species Noted In or Adjacent to Wetland Areas	Overall Analysis Rating[e]	Functional Value Rating (%)	Functional Units[f] (ha [ac])	Primary Functions Values	Jurisdictional Wetland Status[g]	Description
Yes (3A, 3B)	WL8	0.3 ha (1.0 ac)	PEM	Herb	Broad-leaf cattail	OBL		III	44%	2.0 ha (5.0 ac)	Sediment/nutrient/toxicant removal. Groundwater discharge/recharge.	J	Depression (open surface). Irrigation canal leakage.
					Smooth scouring-rush (*Equisetum laevigatum*)	FACW					General wildlife habitat.		
					Three-square bulrush	OBL							
					Prairie cordgrass (*Spartina pectinata*)	OBL							
					Canadian single-spike sedge (*Carex scirpoidea*)	FACU							
Yes (3A, 3B)	WL9	0.7 ha (1.5 ac)	PEM & PSS	Herb	Broad-leaf cattail	OBL		III	44%	0.7 ha (2.0 ac)	Sediment/nutrient/toxicant removal. Groundwater discharge/recharge.	J	Depression (open surface). Wetland source: Irrigation canal leakage.
					Baltic rush	OBL					General wildlife habitat.		
					Prairie cordgrass	OBL							
				Shrub	Sandbar willow	OBL							
No	WL10	0.1 ha (<0.5 ac)	PEM	Herb	Broad-leaf cattail	OBL		III	33%	0.1 ha (0.5 ac)	Sediment/nutrient/toxicant removal. Groundwater discharge/recharge.	NJ	Depression (open surface). Irrigation canal leakage.
					Three-square bulrush	OBL							
					Beaked sedge (*Carex utriculata*)	OBL							
No	WL11	0.1 ha (0.5 ac)	PEM & PSS	Herb	Broad-leaf cattail	OBL		II	73%	1.3 ha (3.0 ac)	Montana Natural Heritage Program species habitat. General wildlife habitat.	J	Depression (open surface). Non-isolated basin/old river oxbow, Clarks Fork Yellowstone River.
					Beaked sedge	OBL							
					Three-square bulrush	OBL							
					Baltic rush	OBL							
				Shrub	Sandbar willow	OBL							
					Dogwood (*Cornus stolonifera*)	FACW							
				Tree	Peachleaf willow	FACW							
					Plains cottonwood	FACW							
Yes (3A, 3B)	WL12	5.5 ha (13.5 ac)	PEM	Herb	Broad-leaf cattail	OBL		III	57%	25.6 ha (63.0 ac)	Short- and long-term surface water storage.	J	Depression (open surface).
					Prairie cordgrass	OBL					Groundwater discharge/recharge.		
					Three-square bulrush	OBL					General wildlife habitat.		
					Smooth scouring-rush	FACW							
				Shrub	Sandbar willow	OBL							
Yes (all alternatives)	WL13	0.1 ha (<0.5 ac)	PEM & PFO	Herb	Beaked sedge	OBL		IV	23%	0.6 ha (1.5 ac)	Sediment/nutrient/toxicant removal.	NJ	Depression (open surface). Roadside ditch.
					Water speedwell (*Veronica anagallis-aquatica*)	OBL							
					Broad-leaf cattail	OBL							
				Tree	Chokecherry	FACU							
					Box elder	FAC							
					Black cottonwood	FAC							

TABLE E-2
Summary of Wetlands Within the US 212 Rockvale to Laurel Project Area, Including Data Collected Using MDT's Montana Wetland Assessment Method[a]

Impacted (Alt.)[b]	Wetland ID	Area ha (ac)	Wetland Type[c]	Vegetative Layer	Primary Species	Wetland Indicator Status for Listed Primary Species[d]	Weed Species Noted In or Adjacent to Wetland Areas	Overall Analysis Rating[e]	Functional Value Rating (%)	Functional Units[f] (ha [ac])	Primary Functions Values	Jurisdictional Wetland Status[g]	Description
Yes (all build alternatives)	WL14	6.5 ha (16.0 ac)	PEM & PSS & PFO	Herb	Broad-leaf cattail	OBL	Canada thistle	I	77%	44.2 ha (109.0 ac)	Threatened and endangered species habitat. (Bald eagles possibly fly through.) Montana Natural Heritage Program species habitat. General wildlife habitat. Flood attenuation. Short- and long-term surface water storage. Uniqueness.	J	Depression (open surface). Non-isolated/old river oxbow, Clarks Fork Yellowstone River.
					Three-square bulrush	OBL	Morning glory						
					Beaked sedge	OBL	Russian olive						
					Cinquefoil (*Potentilla rivalis*)	NI							
				Shrub	Dogwood	FACW							
					Sandbar willow	OBL							
					Bebb willow (*Salix bebbiana*)	FAC+/FACW							
				Tree	Peachleaf willow	FACW							
					Plains cottonwood	FACW							
					Narrowleaf cottonwood (*Populus angustifolia*)	FACW							
					Russian olive (*Elaeagnus angustifolia*)	FAC							
No	WL15	0.3 ha (0.5 ac)	PSS	Herb	Small-winged sedge (*Carex microptera*)	FAC		III	35%	0.4 ha (1.0 ac)	Sediment/nutrient/toxicant removal.	J	Depression (open surface).
					Western dock	OBL							
					Sandbar willow	OBL							
				Shrub	Mackenzie willow (*Salix rigida* var. *mackenzieana*)	OBL							
				Tree	Plains cottonwood	FACW							
No	WL16	<0.1 ha (<0.5 ac)	PEM	Herb	Poison ivy (*Rhus radicans*)	NI		III	38%	0.5 ha (1.0 ac)	General wildlife habitat. Groundwater recharge/discharge	J	
					Wild licorice	FAC-							
					Broad-leaf cattail	OBL							
					Baltic rush	OBL							
					Beaked sedge	OBL							
Yes (3A, 5A)	WL17	0.6 ha (1.5 ac)	PFO	Herb	Cow parsley (*Heracleum lanatum*)	FACW		II	64%	1.1 ha (2.5 ac)	General wildlife habitat. Uniqueness.	J	Depression (open surface). Water source is mainly from irrigation canal turnout leak.
					Stinging nettle	FACW							
				Shrub	Chokecherry	FACU							
				Tree	Peachleaf willow	FACW							
					White poplar (*Populus alba*)	NI							
					American elm (*Ulmus americana*)	FAC							
Yes (3A)	WL18	0.5 ha (1.5 ac)	PSS & PFO	No access allowed at time of survey. From a distance and from aerial photographs, looks similar to WL 17. Canal leak probable water source.								J	
Yes (3A)	WL19	0.6 ha (1.5 ac)	PFO	No access allowed at time of survey. From a distance and from aerial photographs, looks similar to WL 17. Canal leak probable water source.								J	
No	WL20	0.1 ha (<0.5 ac)	PEM	No access allowed at time of survey. From a distance and from aerial photographs, looks similar to WL 17. Canal leak probable water source.								J	
Yes (3A)	WL21	0.3 ha (0.5 ac)	PFO	No access allowed at time of survey. From a distance and from aerial photographs, looks similar to WL 17. Canal leak probable water source.								J	

TABLE E-2
Summary of Wetlands Within the US 212 Rockvale to Laurel Project Area, Including Data Collected Using MDT's Montana Wetland Assessment Method[a]

Impacted (Alt.)[b]	Wetland ID	Area ha (ac)	Wetland Type[c]	Vegetative Layer	Primary Species	Wetland Indicator Status for Listed Primary Species[d]	Weed Species Noted In or Adjacent to Wetland Areas	Overall Analysis Rating[e]	Functional Value Rating (%)	Functional Units[f] (ha [ac])	Primary Functions Values	Jurisdictional Wetland Status[g]	Description
No	WL22	1.0 ha (2.5 ac)	PEM	Herb	Broad-leaf cattail	OBL		IV	16%	1.4 ha (3.5 ac)	Moderate sediment/nutrient/toxicant removal potential.	J	Depression (open surface).
					Smooth scouring-rush	FACW							
					Three-square bulrush	OBL							
No	WL23	0.8 ha (2.0 ac)	PEM & PSS	Herb	Broad-leaf cattail	OBL		II	62%	4.5 ha (11.0 ac)	Short- and long-term surface water storage. Sediment/nutrient/toxicant removal.	J	Depression (open surface), possibly an old oxbow of the Clarks Fork Yellowstone River.
					Three-square bulrush	OBL							
					Common reed	FACW+							
				Shrub	Sandbar willow	OBL							
				Tree	Peachleaf willow	FACW							
Yes (1)	WL24	2.8 ha (7.0 ac)	PFO	Tree	Black cottonwood	FAC		II	68%	27.7 ha (61.0 ac)	Sediment/shoreline stabilization. Production export/food chain support. Groundwater discharge/recharge.	J	Riparian edge of perennial stream.
					Box elder	FAC							
					Sandbar willow	OBL							
Yes (1)	WL25	0.2 ha (0.5 ac)	RUB					III	38%	--	Sediment/shoreline stabilization.	J	Aquatic bed riverine upper perennial. Active channel.

[a]These data are based on preliminary wetland field evaluations using MDT's Montana Wetland Assessment Method (MWAM). Formal delineations with soil analyses would be conducted on the alternative selected.

[b]Yes (X, Y, Z) = direct impact, with alternative identifiers in parentheses; No = no direct impact.

[c]Wetland Type: PEM = palustrine emergent marsh; PFO = palustrine forest; PSS = palustrine scrub-shrub; RUB = riverine unconsolidated bottom.

[d]Wetland Indicator Status for Listed Primary Species: FAC = facultative; FACU = facultative upland; FACW = facultative wetland; OBL = wetland obligate; NI = no indicator; + and - = modifiers

[e]Overall Analysis Rating: Functional categories I through IV with I = wetlands that are exceptionally high quality and are rare to uncommon; II = wetlands that are more common than I and that provide habitat for sensitive species, have high wildlife value, are unique or have high function values; III = wetlands that are more common, generally less diverse and smaller and more isolated than II; IV = wetlands that are small, isolated, and lack vegetative diversity.

[f]A functional unit is the size of the wetland multiplied by the actual function points of the wetland for the Category being rated or for the wetland as a whole.

[g]Jurisdictional Wetland Status: J = jurisdictional wetland. NJ = non-jurisdictional wetland.

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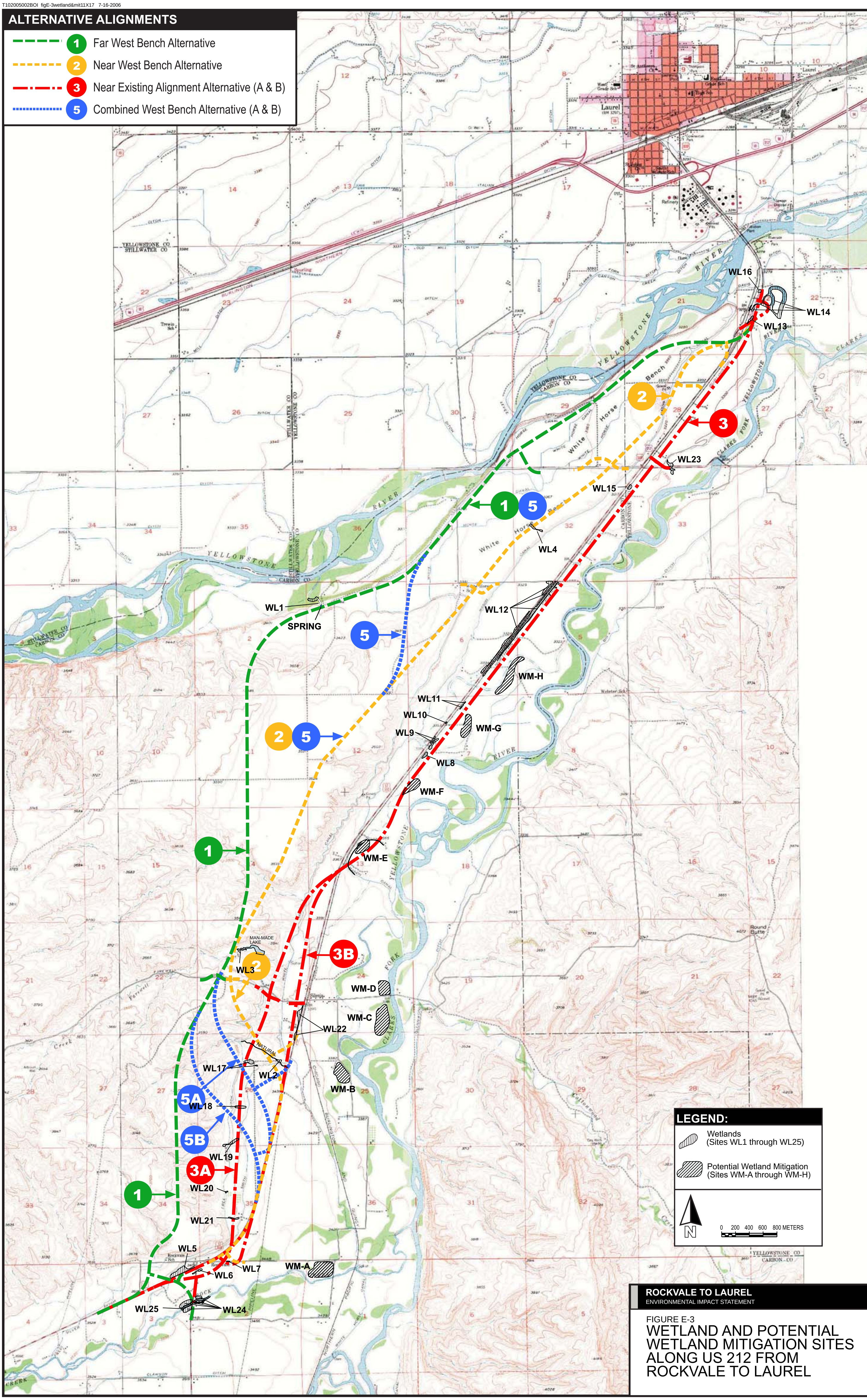

FIGURE E-3
WETLAND AND POTENTIAL WETLAND MITIGATION SITES ALONG US 212 FROM ROCKVALE TO LAUREL

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Timing and Duration of Discharge

The timing and duration of each discharge will depend on the type of construction activity being conducted (bridge, culvert construction, or road construction). The timing and schedules for construction would be developed during the final design phase. Timing will reflect an effort to minimize detrimental effects such as sedimentation, turbidity, etc. Construction will not impact any critical life stage or activity of aquatic organisms such as migration or spawning. However, some bird migration and nesting activity may restrict construction. Migration and nesting activities usually fall between April 1 and July 15.

Description of Disposal Method

The type of disposal method would depend on the type of construction that is undertaken at the fill location. A description of the disposal method that details general construction methods for road building or for constructing a culvert in the vicinity of wetlands or waters of the U.S. is provided below.

Roadway Construction: Fill would need to be placed in wetlands during construction of the highway where they are encountered along the new alignment. Large earth-moving and excavating equipment would most likely be used to place the fill. The fill would be necessary to adjust the elevation of the highway or to construct proper side slopes. The fill would be from nearby sources (borrow pits) or from excess natural material removed from other roadway construction locations.

Culvert Construction: Culverts to be placed within four canal crossings and the Farewell Creek crossing would be constructed during the non-irrigation season to the extent practicable, when the canals are dry. If construction schedules do not allow for non-irrigation season construction, the construction site would be hydraulically isolated by constructing cofferdams upstream and downstream of the construction site. Canal water would be pumped around the construction area. Any water pumped from the construction area would be placed into temporary settling ponds to remove sediment prior to returning the water to the canal.

Factual Determinations (Section 230.11)

Physical Substrate Determinations

Substrate Elevation and Slope

Canal and Stream Crossings: There would be no adverse impact to substrate slope at canal and stream crossings. The slope of each canal is essentially flat, and this slope would be maintained. Substrate slope in Farewell Creek is 1.4 percent. Substrate elevation would be slightly increased at each canal and stream crossing to accommodate placement of the culvert. Table E-3 shows the affected area of each wetland or waters of the U.S.

Road Building: As fill material is placed in wetlands to construct the roadbed and provide slopes, the elevation at that point would increase to meet the new roadway elevation. The amount of elevation change will be determined during final design of the roadway. The slope of the wetlands outside the location of fill would not change.

Changes to natural surface flow patterns and changes in the natural erosion and accretion patterns would be avoided to the extent possible.

Compare Fill Material and Substrate at Discharge Sites

Canal substrate is typically sandy to granular sediments, with some gravel and small rock. The fill to be used in canals would be metal and/or concrete culvert material.

Substrates in wetland areas could be fine sediments or organic material. The fill to be placed in the wetlands would be either granular material from nearby borrow areas or material excavated elsewhere in the construction area. Whichever is chosen would be approved material for roadway construction.

Dredged/Fill Material

All fill material placed into wetlands or canals would be placed in such a manner to avoid or minimize movement from erosion. All fill materials, regardless of the source, would be earth and crushed or naturally occurring sand and gravel or culvert materials.

Physical Effects on Benthos Invertebrates/Vertebrates

Physical Effects on Benthos: Benthic organisms could only be affected at the point of fill discharge at any location where construction-related sediment would accumulate. Effects would be localized and short-term, however, as the benthic organisms would colonize and re-establish themselves in suitable parts of the fill. There may be a slight decrease in the amount of substrate, as the fill would create more dry land and less wet area.

Aquatic Macro-invertebrates: Impacts to aquatic macro-invertebrates would be similar to those for benthos: temporary and short-term. Initial fill activities would bury some invertebrates, but they would be expected to re-establish themselves on suitable portions of the new substrate fairly quickly. Sediment released into waters and wetlands during construction would also affect invertebrates by interfering with foraging by aquatic insects and by filling interstitial spaces, which is invertebrate habitat. Sediment effects on invertebrates would be short-term. However, interstitial space would be limited within fine-grain fill, which would limit the amount of long-term macro-invertebrate habitat.

Vertebrates: Fish are the primary aquatic vertebrate potentially affected by the project. However, no project-related activities would occur directly in habitat occupied by fish. Sediment control through implementation of Best Management Practices (BMPs) would protect occupied habitat from sediment effects. Toxic material releases would also be prevented through implementation of BMPs. No impacts are expected to aquatic vertebrates.

Erosion and Accretion Patterns

All culverts will be sized and oriented in a manner to avoid initiating erosion and subsequent accretion. There would be no effect to waters or wetlands because of erosion and accretion resulting from culvert placement.

Actions Taken to Minimize Impacts

Measures to minimize wetland and waters impacts would be incorporated into the Preferred Alternative. Specific actions to minimize impacts would be described when specific impacts are identified during final design. Actions to be implemented would include, but not be limited to:

1. Avoiding wetlands and waters during final design by shifting alignment or altering grade
2. Minimizing the fill footprint
3. Using fill materials that are similar to the underlying substrate when possible
4. Scheduling construction to coincide with low flow periods or outside the irrigation season
5. Using BMPs in the MDT Highway Construction Standard Erosion Control Work Plan to control erosion. This would minimize discharge of sediments and pollutants into surface waters. Appropriate BMPs would be selected during final design
6. Including BMPs and compliance monitoring in construction specifications

Water Circulation, Fluctuation, and Salinity Determinations

Water

The DEIS discusses surface waters and their quality. Impacts to specific water quality components are discussed below. The Yellowstone River, Clarks Fork Yellowstone River, and Rock Creek were included on the 1996 303(d) list of impaired water bodies. Only Rock Creek was included on the Final 2000 303(d) list. Table E-4 outlines the probable causes for listing.

Salinity: No specific salinity tests have been conducted, but there is some indication that saline areas could be present in the project area. Salinity increases in wetlands should not be a problem, because hydrologic regimes would not be altered and the use of fill materials significantly different from local substrates would be minimized.

Water Chemistry: There is no reason to suspect that the Preferred Alternative would increase the pH, hardness, alkalinity, or mineral concentration of surface waters in the project area.

Suspended Solids: There may some localized, temporary increases in suspended solids in wetlands from construction. There is no reason to anticipate a long-term increase in suspended solids in surface waters. Using appropriate granular fill material and construction methods would minimize the potential for suspended solids increases. Construction would be scheduled to avoid high runoff periods or the irrigation season to the extent practicable.

TABLE E-4
Stream Segments in the Project Area Found on the 1996 and 2000 303(d) Lists

Stream	Length (km)	Probable Cause
1996 303(d) List		
Yellowstone River	109.4	Salinity/TDS/Chlorides; Suspended Solids; Un-ionized Ammonia
Clarks Fork Yellowstone River	107.8	Flow Alteration; Metals; Nutrients; Salinity/TDS/Chlorides; Siltation; Suspended Solids; Thermal Modifications
Rock Creek	24.1	Flow Alteration; Other Habitat Alterations; Siltation; Suspended Solids
2000 Final 303(d) List		
Rock Creek	109.4	Flow Alteration; Dewatering

Clarity: Turbidity will increase slightly during construction because of suspended solids. Even though this effect is expected to be minor and temporary, it can cause impacts to aquatic organisms from filling of interstitial spaces and reduction in visibility. Erosion control Best Management Practices (BMPs) would be used to minimize this effect.

Color: There will be a temporary change in wetland water color during construction from increases in suspended solids and turbidity. The effect would be short-term and localized and be most pronounced during the construction period.

Odor: There would be no expected change in surface water odor.

Taste: There would be no expected change in surface or ground water taste.

Dissolved Gas Levels: There would be no change in hydrologic regimes that would alter flow patterns. Therefore, there would be no change in surface water dissolved gas levels.

Nutrients: Surface water nutrients, which typically arise from agricultural activities and decay of organic matter, would not change because of construction of the Preferred Alternative.

Eutrophication: As discussed above, sediment and nutrient loads in surface waters are not expected to significantly increase with project implementation. Waters and wetlands impacted by the project are primarily canals and depressional wetlands. Canals are free-flowing and therefore nutrient-induced plant growth is usually not a problem. Wetlands are,

by their nature, usually eutrophic. Eutrophication should not increase, but may occur more rapidly in depressional wetlands when they are partially filled.

Current Patterns and Circulation

Current Patterns, Drainage Patterns, Normal and Low Flows. No project feature is expected to alter natural flow or drainage patterns. Seasonal surface or ground water flows would not be altered.

Velocity. No structure constructed during this project would impede existing water flow. Existing velocities would not be affected.

Stratification. The proposed project is not expected to alter the current stratification of waters in any wetland or waters of the U.S.

Hydrologic Regime. The proposed project is not expected to alter any hydrologic regime in any wetland or waters of the U.S.

Aquifer Recharge. The proposed project is not expected to alter recharge of any aquifer from any wetland or waters of the U.S. in the project area.

Normal Water Level Fluctuations

All culverts would be designed to pass existing velocities and flows without altering water surface elevations or causing backwater problems. There would be no effect.

Salinity Gradients

Changes in salinity gradients would not be expected, as changes in hydrology are not anticipated.

Actions That Will Be Taken to Minimize Impacts

The following measures are proposed to minimize impacts:

1. All culverts will be constructed and sized to maintain natural water levels and flow velocities.

2. All existing cross-highway drainage patterns across the new roadway will be maintained to allow passage of aquatic organisms.

Suspended Particulate/Turbidity Determinations

Expected Changes in Suspended Particulate and Turbidity Levels in the Vicinity of the Disposal Sites

The placement of fill into wetlands and waters would introduce some fine particulate material into the surface water. This would cause temporary increases in suspended particulates and turbidity. In addition, bottom sediments may be re-suspended when fill is placed into wetlands; thereby increasing suspended particulates and turbidity.

Stormwater runoff may also carry sediment into surface water. Therefore a standard erosion control plan would be developed and adhered to in order to minimize sediment dislodgment and transport. Any sediment deposited into wetlands from erosion that degrades wetland functions or reduces functional area will need to be removed.

Effects on Chemical and Physical Properties of the Water Column

Light Penetration. There would be a short-term introduction of sediment into surface waters near construction sites. This would temporarily increase turbidity and reduce light penetration.

Dissolved Oxygen. There would be no turbulence or stagnation introduced into wetlands or waters and therefore no affects to dissolved oxygen. Fill introduced into wetlands will be inorganic for the most part and therefore would not introduce any biological oxygen demand.

Toxic Metals and Organics. Fill material would be approved for highway construction and not contain high levels of organic material or any toxic metals. No fill would be collected from areas identified as hazardous in the DEIS.

Pathogens. Domestic animal and wildlife waste is found in the project area. No incidences of whirling disease or botulism are known to have occurred in the project area. All fills will be free of organic material and pathogens.

Aesthetics. There would be some localized, temporary adverse effect on the aesthetics of surface waters adjacent to construction areas from sediment deposition. The effect would decrease as the distance from the construction site increases. The effect would be temporary.

Effects on Biota

Primary Production and Photosynthesis. There would be some temporary increase in turbidity of surface waters, but not at a level that would affect photosynthesis or primary productivity.

Suspension/Filter Feeders. Organic matter suspended in the water column are captured by suspension/filter feeders. Suspended sediments near construction sites would affect the ability

of these organisms to feed, may bury the organism, or may cover their habitat. The effect would be temporary and the organisms would rapidly re-colonize the area after construction.

Sight Feeders. Clear water is needed for these organisms to forage. Suspended sediments near construction sites would affect the ability of these organisms to feed. The effect would be temporary and as described above. The organisms would rapidly move back into areas not directly affected by fill placement after construction.

Actions Taken to Minimize Impacts

MDT's Standard Erosion Control Work Plan would be used to minimize suspended sediment and turbidity effects. The plan would minimize the extent of disturbed areas, reduce the duration of exposure, stabilize disturbed areas, and retain sediment in the corridor.

Aquatic Ecosystem and Organism Determinations

Effects on Special Aquatic Sites

Sanctuaries and Refuges. There are no federal, state, or local designated wildlife or waterfowl sanctuaries or refuges in the project area. There would no impacts to these types of sites.

Wetlands. Table E-2 shows the type and amount of wetlands in the project area. Table E-3 show the impacts expected to these sites from implementation of the Preferred Alternative. There are a variety of wetland types, mostly associated with irrigation. Canals are included as waters of the U.S.

The Preferred Alternative is expected to impact 1.8 ha of wetlands and waters. This amount is less than that originally anticipated to be impacted, because of adjustments in the alignment to avoid wetlands. Approaches to compensate for this loss are discussed later in this report.

Mudflats. There are no mudflats in the project area and, therefore, no effects to them.

Vegetated Shallows. There are no vegetated shallows in the project area and, therefore, no effects to them.

Riffle and Pool Complexes. There are riffle and pool complexes associated with other alternatives in the proposed project. There are none associated with the Preferred Alternative and therefore, no effects to them.

Effects on Threatened and Endangered Species and Their Habitats

The U.S. Fish and Wildlife Service (FWS) has reported that two federally listed species are found in the project area: bald eagle (threatened) and black-footed ferret (endangered). There are no known black-footed ferrets in the project area. Bald eagles occupy habitat along the

Clarks Fork Yellowstone River and along the Yellowstone River. An active nest occurs along the Clarks Fork Yellowstone River near Silesia.

No direct impacts are expected to any listed species. An indirect effect may occur to bald eagles, where they could be struck by a car when feeding on carrion along the new highway alignment. There would be “no effect” to any listed species. Specific conservation measures, as stated in the Biological Assessment, to avoid impacts to bald eagles include the curtailment of construction during the breeding, nesting, fledging, and wintering season from November 15 through August 31.

Effects on Other Animals

A variety of wildlife is found in the project area. Predominant habitats are upland grassland, pasture, and agricultural fields. Wood lot, riparian, and wetland habitats are also present, but in lesser amounts. Human and human-related activities such as livestock grazing and farming are common throughout the project area.

Vehicle collisions are the greatest threat to wildlife. Small mammal, reptiles, and amphibians are the most susceptible to collisions, because they are small and less mobile. Deer are also likely to be hit. Vehicle collision mortality may increase over existing conditions, because the old road will not be closed and, therefore, there will be more highway miles driven in the project area. Speeds may also increase, possibly resulting in additional collisions. Power lines may affect some species of raptors and other birds, adversely or positively. The new road may fragment habitat, especially for reptiles and other species with limited habitat areas. Other habitat would be lost to the new roadway. Additional effects on wildlife may occur as a result of noise, dust, etc.

The Biological Report details potential impacts to wildlife and their habitats.

Effects on Terrestrial Plants

Sections of plant communities would be lost with construction of the proposed project. Losses would be related to direct removal during construction (such as wetland fills), temporary loss under project facilities such as batch plants, contractor trailers, and material storage piles. The small acreage removed relative to the amount of similar habitats in the project area would result in minimal impacts.

Disturbance can result in bare areas susceptible to weed invasion. Purple loosetrife, Canada thistle, and spotted knapweed are of most concern in and near wetland habitats. BMPs would be used to rapidly revegetate disturbed areas before weeds can invade and displace native plants. Weed control efforts should continue for a few growing seasons until desired vegetation is re-established.

Actions Taken to Avoid and Minimize Impacts

No discharge of fill material into wetlands will be allowed if there is a practicable alternative to the discharge. The Preferred Alternative has been developed to minimize wetland impacts

to the extent practicable. As a result of avoidance efforts, approximately 1.5 ha of wetland impacts were avoided (Table E-1).

Additional efforts to minimize wetland impacts include the following:

1. Use, wherever possible, steeper fill slopes and smaller fill volumes for construction in wetlands. The exact measures would be refined during final design.
2. Perform as much work in wetlands as possible from adjacent uplands.
3. Clearly mark wetland areas to be avoided during construction.
4. Limit wetland disturbance by clearly showing limits of grubbing, clearing, and filling on the construction plans and indicating none is allowed outside the limits. Any temporary clearing outside the construction limits, but within the right-of-way, that is necessary for culvert installation or other similar activities would be kept to a minimum area and reclaimed after disturbance is complete.
5. Perform culvert placement outside the irrigation season.
6. Use phased construction to keep the amount of bare soil to a minimum.

Other construction restrictions may be required to avoid nesting migratory birds, including bald eagles.

Compensatory Actions Taken to Minimize Impacts

All practicable and appropriate efforts will be made to avoid and then minimize impacts to wetlands and waters from the proposed project. However, some unavoidable project-related impacts to wetlands and waters are expected. The COE requires that compensatory mitigation be provided for all unavoidable adverse impacts. The COE's preference is that mitigation be on-site (in the project area) and in-kind (same type of wetlands that were impacted). If on–site opportunities are not available, then off-site mitigation can be proposed. Finally, out-of-kind mitigation can be proposed if in-kind mitigation is not possible.

Compensatory mitigation is designed to replace functions and values lost from impacted wetlands at the mitigation site. MDT's approach is to propose on-site mitigation first. If that is not possible, then off-site mitigation within the same watershed is the next option. A conservation easement or similar restriction would protect desired wetland functions at all compensatory mitigation sites.

Successful creation of a properly functioning natural wetland community is a difficult and complicated process. It requires time, proper site selection and analysis, a good design, close adherence to the design during construction, post-construction monitoring, and, possibly, corrective measures. Establishment of a reliable water source is a key component in the development of a successful mitigation site. Several sources of water have been located in the project area to provide the required wetland hydrology.

A Section 404 Permit will be required from the COE to place fill in wetlands. Compensatory mitigation would be proposed as part of the permitting process. The exact acreage of

compensatory mitigation would be determined after exact impacts have been identified during final design. The COE allows wetland impacts to be compensated at a ratio of 1:1 for restoration (re-establishment) and establishment (creation) of wetlands. Larger ratios would be required for enhancement or rehabilitation of existing wetlands.

A brief description of measures taken to avoid and minimize wetland impacts as well as measures to compensate for unavoidable impacts by implementing wetland mitigation measures follows. A more detailed description can be found in the DEIS.

Avoidance. Alternative 4 proposed crossing the Clarks Fork Yellowstone River twice. This alternative would have potentially resulted in significant wetland and waters impacts as well as significant impacts to aquatic and terrestrial wildlife. The alternative was dropped to avoid those impacts. Other opportunities to avoid wetland impacts will be identified during final design.

Minimization. In addition to previous efforts to minimize wetland impacts (Table E-1), additional minimization possibilities will be identified during final design.

On-Site Mitigation. A total of eight sites have been identified in the project area where one or more of the impacted wetland types could be created (see DEIS for locations). Table E-5 shows the sizes of the potential sites. All of these sites have likely supported wetlands prior to settlement and subsequent hydrologic alterations by settlers. The DEIS describes actions proposed at the mitigation sites to restore lost wetland functions and values.

TABLE E-5
Area of Potential Wetland Compensatory Mitigation Sites

Wetland Mitigation Site	Approximate Area (hectares/acres)
WM-A	6.6/16.5
WM-B	4.4/11.0
WM-C	7.0/17.5
WM-D	3.1/7.5
WM-E	2.7/6.5
WM-F	2.7/6.5
WM-G	3.4/8.5
WM-H	5.6/14.0

Monitoring of Mitigation Actions

Monitoring would be conducted at the mitigation site to follow the development of the new wetland. The Project Manager (or designee), MDT's Wetland Biologist, and other agency representatives would conduct inspections before, during, and after wetland construction. Inspections are likely to follow as described below:

- A visit to inspect the site to review final design plans prior to construction
- A visit prior to final grading
- A visit to monitor planting
- A visit following the first growing season to observe initial performance
- Annual monitoring using protocols and forms developed by MDT for 5 years. Annual reporting requirements are in force. Suggestions for management changes would be made in the annual reports, if needed to correct deficiencies.
- Final inspection made in Year 4 or Year 5 to determine mitigation success. The COE is likely to participate in this visit and the success would be determined based on development of the three parameters used by the COE to delineate wetlands. It is unlikely that hydric soils would have completely developed within 4 or 5 years, but hydric soils can be assumed if hydrophytic vegetation and wetland hydrology are well established.
- Periodic long-term monitoring to ensure there are no adverse changes in hydrology
- There will also be field monitoring of the construction of the Preferred Alternative to ensure unacceptable impacts to surface waters are not occurring. It will also be determined that impacts are as predicted and that additional impacts are not incurred, which would require additional mitigation. Participants in this monitoring may include MDT, COE, Montana Department of Environmental Quality (MDEQ), and the Montana Department of Fish, Wildlife, and Parks (MFWP).

Potential Effects on Human Use Characteristics

Livestock grazing would be lost on areas where rangeland and pasture are lost to construction activities or where livestock are excluded from near the new roadway. This impact affects only a small portion of total grazing area in the project area and would be minimal.

There would be some agricultural cropland lost to construction. Approximately 47.1 ha of prime farmland and state important farmland would be lost, and approximately 111.8 ha of total farmland would be lost. While this is a small portion of the total farmland in the project area, its loss would be important to those farmers losing a portion of their fields.

Five domestic wells would be lost with construction of the Preferred Alternative. No public water supply wells would be affected. This impact is minimal, as MDT would help affected landowners replace lost water supplies.

Determination of Cumulative Effects on Aquatic Ecosystems

Cumulative effects are effects to wetlands in an area from a number of projects, each contributing a certain amount of impact. Individually, the effects may be minor, but collectively, the sum of the small impacts may result in a large impact to water quality and the aquatic ecosystem.

There are no known projects in the vicinity of this project that would result in wetland losses.

Determination of Secondary Effects on Aquatic Ecosystems

Secondary effects are those that do not arise directly from fill placement, but affect wetlands from other project-related activities. Secondary effects that may occur with the Preferred Alternative include sediment deposition from erosion, accidental spills of toxic materials into a wetland, and establishment of noxious weeds or other undesired invasive plants on bare areas. An Erosion Control Plan and Stormwater Management Plan would prevent sediment deposition. Standard spill prevention BMPs would prevent toxic releases during construction. Rapid revegetation of disturbed areas, as well as active weed control until desired vegetation is established, would help prevent establishment of noxious weeds and other invasive plants.

Findings of Compliance

Adaptation of the Section 404(b)(1) Guidelines to this Evaluation

The conceptual design for the Preferred Alternative was used to predict impacts from project implementation. The final design stage will be dependant on acceptance and approval of the Preferred Alternative. Some of the project-specific impacts presented in this 404(b)(1) analysis may need to be modified based on final design. A final 404(b)(1) analysis will be prepared following final design.

Evaluation of Availability of Practical Alternatives to the Proposed Discharge Sites that Would Have Less Adverse Impact on the Aquatic Ecosystem

Section 230.10(a) of the Guidelines states "Except as provided under 404(b)(2), no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences." A discussion of alternative evaluated is presented below. More detailed analysis and descriptions are included in the DEIS.

No Build

There would no additional wetland impacts under this alternative. However, the existing safety problems and inability of the present roadway to accommodate the desired level of service needed would remain. Current conditions are not acceptable and do not meet the purpose or need of the proposed project.

Alternative 1—Far West Bench

Alternative 1 would impact 0.5 ha of jurisdictional wetlands and 1.4 ha of waters of the U.S.(canals). This compares to 0.6 ha and 1.2 ha of jurisdictional and waters impacts with the Preferred Alternative (5B). This is the only Build Alternative with fewer jurisdictional wetland impacts than the Preferred Alternative. However, this alternative would impact Rock Creek, a perennial stream. This impact was deemed more significant than impacts attributable to the Preferred Alternative, because of potential adverse effects on aquatic resources.

Alternative 2—Near West Bench

Alternative 2 would impact 0.8 ha of jurisdictional wetlands and 0.5 ha of waters of the U.S. (canals). Although impacts to canal waters are less, this alternative impacts a larger area of wetlands compared to the Preferred Alternative.

Alternative 3—Near Existing Alignment

Alternative 3A would impact 1.0 ha of jurisdictional wetlands and 0.5 ha of waters of the U.S. (canals). Alternative 3B would impact 0.9 ha of jurisdictional wetlands and 0.3 ha of waters of the U.S. (canals). Although impacts to canal waters are less, these alternative variants impact a larger area of wetlands compared to the Preferred Alternative.

Alternative 5A—Combined West Bench

Alternative 5A would impact 0.6 ha of jurisdictional wetlands and 1.1 ha of waters of the U.S. (canals). Alternative 5A wetland impacts are similar to wetland impacts associated with the Preferred Alternative. However, local residents impacted by Alternative 5 preferred variant 5B compared to variant 5A.

Compliance with Applicable State Water Quality Standards

The Preferred Alternative will be in compliance with state water quality standards providing the following permits are issued:

1. **A Montana Stream Protection Act** (SPA 124) **Authorization** must be issued by MDFWP. The purpose of the authorization is to preserve Montana's fish and wildlife resources in their natural existing state. MFWP will examine the impacts associated with the Preferred Alternative and determine if the alternative can be approved. Approval indicates compliance.
2. **Floodplain Development Permits** must be issued by the Floodplain Administrators of Yellowstone and Carbon counties under the Montana Floodplain and Floodway Management Act. The Act seeks to limit the expenditure of public tax dollars for emergency operations and disaster relief that arise from floodplain and floodway area development that may result in damage or hazards to life. Specific engineering information is required to evaluate the project and issue the permit.
3. The Montana Department of Environmental Quality (MDEQ) must issue a **Montana Pollutant Discharge and Elimination System Permit (MPDES Permit**.) The purpose of the permit is to protect water quality and aquatic resources by minimizing soil erosion and sedimentation. The permit satisfies Section 402 of the Clean Water Act (CWA). Stormwater pollution prevention plans must be submitted for review by EPA that details specific BMPs to be used to protect surface waters. Issuance of the permit and establishment of additional conditions imposed by the permit constitutes compliance.
4. The Montana Department of Environmental Quality (MDEQ) must issue a **Section 401 of the CWA Permit** to ensure that discharge into waters of the U.S. meet water quality standards. The 401 permit must be obtained prior to other federal permits or licenses, including the Section 404 Permit. This law is designed to maintain the chemical, biological, and physical integrity of surface waters. Issuance of the permit constitutes compliance.

As long as acceptable design and construction practices are followed, acquisition of these permits should be routine.

This project is in compliance with the following federal water quality standards:

1. **Clean Water Act as Amended (Federal Water Pollution Control Act), 33 USC 1251 et seq:** The COE and MDEQ will be contacted when we are ready to proceed with the Section 404 permit. Otherwise, this project is in compliance.
2. **Fish and Wildlife Coordination Act, as Amended, 16 USC 661, et seq:** MFWP and FWS will be contacted and their comments incorporated into the project. This project is in compliance.
3. **Floodplain Management (Executive Order 11988):** The project will be designed to avoid significant impacts to floodplains. This project is in compliance.
4. **Protection of Wetlands (Executive Order 11990):** This project will involve work in wetlands and waters of the U. S. The project will first avoid, then minimize, and then provide compensatory mitigation for all wetland and waters impacts that cannot be avoided. The project is in compliance.

The following water quality standards are not considered to be applicable to this project:

1. **Rivers and Harbors Act, 33 USC, 401, et seq:** There would be no structures placed in navigable waters, so this Act does not apply.
2. **Federal Water Project Recreation Act, as Amended, 16 USC, 460-1(12) et seq:** This is not considered a water recreation project, so this Act does not apply.
3. **Estuary Protection Act, 16 USC, 1221, et seq:** This project does not involve an estuary, so this Act does not apply.
4. **Coastal Zone Management Act, as Amended, 16 USC, 1531, et seq:** This project is not in a coastal zone, therefore this Act does not apply.
5. **Marine Protection, Research, and Sanctuaries Act, 33 USC, 1401, et seq:** This project does not discharge material into the ocean, therefore this Act does not apply.
6. **Watershed Protection and Flood Prevention Act, 16 USC, 1101, et seq:** This project would not construct a dam in an upstream watershed, therefore this Act does not apply.

Compliance with Applicable Toxic Effluent Standard or Prohibition Under Section 307 of the CWA

Section 307 of the CWA imposes discharge limitations on discharge of aldrin/dieldrin, several DDT compounds, endrin, toxaphene, benzidine, and polychlorinated biphenyls (PCB) into surface water. This project will not discharge any of these compounds and therefore is in compliance.

Compliance with Endangered Species Act of 1973, As Amended

This project will have **“no effect”** on any federally listed threatened or endangered species. It is in compliance with this Act. The FWS will be consulted as part of this project.

Compliance with Specific Measures for Marine Sanctuaries Designated by the Marine Protection, Research, and Sanctuaries Act of 1972

This project does not involve oceans and therefore this Act is not applicable.

Evaluation of Extent of Degradation of the Waters of the United States

The following are conclusions from previous sections of this evaluation:

Significant Adverse Effects on Human Health and Welfare

This project will not significantly affect private or municipal water supplies, recreational or commercial fisheries, aesthetics, or water-borne diseases. Temporary water degradation may occur because of sedimentation during construction, but no long-term effects will result from implementation.

Significant Adverse Effects on Life Stages of Aquatic Life and Other Wildlife Dependant on Aquatic Ecosystems

Wildlife habitat, benthos, invertebrates, vertebrates, photosynthesis, filter feeders, and sight feeders will be temporarily affected during project construction. There would be a slight long-term loss of habitat where the fill extends above the water.

Significant Adverse Effects on the Aquatic Ecosystem, Ecosystem Diversity, Productivity, and Stability

This project will not produce significant adverse effects on the diversity, productivity, or stability of aquatic ecosystems.

Significant Adverse Effects on Recreational, Aesthetic, and Economic Values

There will be no significant adverse effect on recreational, aesthetic, or economic value of waters of the U.S. from implementation of this project.

Appropriate and Practicable Steps Taken to Minimize Potential Adverse Impacts of the Discharge on the Aquatic Ecosystem

Measures to minimize effects have been discussed previously in this analysis. Sedimentation is likely the most significant effect of the proposed project's discharge. Implementation of a Highway Construction Standard Erosion Control Work Plan will be used to ensure establishment and implementation of BMPs to protect surface water. Specifically:

1. The project will conform to the natural aquatic ecosystem and surrounding terrain to the extent practicable.
2. The amount of land disturbed will be limited and of short duration.
3. Disturbed areas will be revegetated as soon as possible.
4. Stormwater runoff will be controlled through implementation of erosion control features.
5. All erosion control features will be maintained.
6. Construction will be timed to avoid any sensitive periods for aquatic organisms.
7. Impacts to wetlands will be avoided and minimized to the extent practicable prior to considering compensatory mitigation.
8. Wetland functions and values will be perpetuated for the life of the project through compensatory mitigation.

Conclusions

The project is currently evaluating four Build Alternatives (six alignment options). A Preferred Alternative, 5B, has been proposed in the DEIS.

The proposed project will not violate Section 307 of the CWA, the Endangered Species Act, or the state water quality standard. The Biological Resources Report will serve as the Biological Assessment for this project.

Approximately 0.6 ha of wetlands and 1.2 ha of waters of the U.S. (canals) will be filled through discharges by the project. Final discharge areas will be determined during final design. Avoidance and minimization of impacts has been implemented and will be ongoing as the final design continues. This evaluation and the DEIS detail the avoidance and

minimization measures that have been taken or will be taken. Appropriate compensatory mitigation sites have been identified.

On the basis of the 404(b)(1) guidelines, the proposed discharge sites for the direct discharge of fill material are specified as complying with the requirements and the guidelines, with the inclusion of appropriate and practicable conditions to minimize pollution or adverse effects on the aquatic ecosystem.

References

Berglund, J. 1999. MDT: Montana Wetland Assessment Method. Montana Department of Transportation and Morrison-Maierle, Inc. 18 p. plus appendices.

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COE. 1987. U.S. Army Corps of Engineers Wetlands Delineation Manual. Waterways Experiment Station, Vicksburg, MS.

Appendix F: Glossary

GLOSSARY

Term	Definition
A	
Access	A legal right to enter the through lanes of a highway facility from abutting property or public streets (MDT, 1992).
Access control	The condition in which the right of owners or occupants of abutting land or other persons to access, light, air, or view in connection with a highway is fully or partially controlled by public authority. Access control limits the conflicts with through traffic by eliminating or limiting the location and number of: 1) private approaches entering directly onto the through traffic lanes or a highway, and 2) public street or road intersections with the highway (MDT, 1992).
Access management	The process of managing the points of access to highway facilities through the use of access control or a permitting system (MDT, 1992).
Aesthetic quality	A perception of the beauty of a natural or cultural landscape.
Affected environment	Existing biological, physical, social, and economic conditions of an area subject to change, both directly and indirectly, as the result of a proposed human action.
Air quality	Measure of the health-related and visual characteristics of the air, often derived from quantitative measurements of the concentrations of specific injurious or contaminating substances.
Anadromous	Used to describe fish (such as salmon and steelhead) that return from the sea to the rivers where they were born in order to breed.
Annual	A plant that flowers, produces seed, and dies in one growing season.
Approach	The roadway used for movement of vehicles across the highway right-of-way between the outside edge of the shoulder of the highway and the right-of-way (MDT, 1992).
Aquifer	A geological formation or structure that stores and/or transmits water, such as to wells and springs.
Archaeologist	A scientist who studies past human life through material remains.

Term	Definition
B	
Benchland	A long, narrow, relatively level terrace or platform breaking the continuity of a slope. In canyons, these landforms are often the result of old stream terraces above the present elevation.
Beneficial uses	One of several uses of streams and lakes that may include drinking, fish habitat, and recreation. This phrase has a specific technical connotation because the federal Clean Water Act requires states to adopt standards and procedures that protect designated beneficial uses of public waters.
Best Management Practice	A practice or combination of practices determined by a state or an agency to be the most effective and practical means (technological, economic, and institutional) of controlling point and nonpoint source pollutants at levels compatible with environmental quality.
Biennial	A term used to describe a plant that lives for 2 years, and produces flowers and fruit in the second year.
Biodiversity	The range of organisms present in a given ecological community or system, which can be measured by the numbers and types of different species, or the genetic variations within and among species.
Biota	The types of plant and animal life found in specific regions at specific times.
Broadleaf	A term used to describe trees that have wide leaves rather than leaves that are thin like (pine) needles.
Buffer	A vegetation strip or management zone of varying size, shape, and character maintained along a stream, lake, road, recreation site, or different vegetation zone to mitigate the impacts of actions on adjacent lands, to enhance aesthetic values, or as a best management practice.
C	
Candidate species	A state and federal designation. State candidate species are those that will be reviewed for possible listing as endangered, threatened, or sensitive. Species for which there is substantial information to support listing the species as threatened or endangered; listing proposals are either being prepared or are delayed by work on higher priority species.

Term	Definition
Colonizer	A plant that is established or becomes established in a biological colony in a new ecosystem.
Conifer	Any tree that has thin leaves (needles) and produces cones. Many types are evergreen.
Consumptive use	That part of water withdrawn that is evaporated, transpired by plants, incorporated into products or crops, consumed by humans or livestock, or otherwise removed from the immediate water environment. Also referred to as water consumed.
Contiguous	Touching or connected throughout in an unbroken sequence.
Critical habitat	**State:** Habitats of threatened or endangered species as designated by various state forest practices boards. **Federal:** Areas designated under the federal Endangered Species Act that meet these criteria: 1. Areas within the geographic area occupied by a federally listed species on which are found physical and biological features essential to the conservation of the species, and that may require special management considerations or protection. 2. Areas outside the geographic area occupied by a listed species, when it is determined that such areas are essential for the conservation of the species.
Cultural resources	Sites, structures, landscapes, and objects of some importance to a culture or community for scientific, traditional, religious, or other reasons.
Cumulative impact	The impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions—regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time (40 CFR 1508.7).

D

Deceleration lanes	An auxiliary lane adjoining the through traveled way for speed change.
Depressed median	A median that is lower in elevation than the traveled way and designed to carry a certain portion of the roadway runoff.

Term	Definition
Discharge	The volume of water that passes a given location within a given period of time. Usually expressed in cubic feet per second (cfs).
Diversity	see *Biodiversity.*
Driveway	A private road giving access to land abutting the highway via an approach (MDT, 1992).

E

Ecosystem	The complex of a community of organisms and its environment functioning as an ecological unit.
Endangered species	Any species in danger of extinction throughout all or a significant portion of its range.
Endemic	Plants or animals that are native to a particular region or country.
Environment	The surrounding conditions, influences, or forces that affect or modify an organism or an ecological community and ultimately determine its form and survival.
Environmental Impact Statement	A formal public document prepared to analyze the impacts on the environment of the proposed project or action and released for comment and review. An EIS must meet the requirements of NEPA, CEQ guidelines, and directives of the agency responsible for the proposed project or action.
Ephemeral	A plant, insect, stream, drainage or other feature that lasts for only a short period of time.
Exotic	In ecology, a term that describes the introduction of a species from another place or region.
Extirpate	To destroy completely; wipe out.

F

Fallow	Allowing cropland, either tilled or untilled, to lie idle during the whole or greater portion of the growing season.
Farm/Field approach	An approach to be used only for access to agricultural lands (farm fields) and no other purpose (MDT, 1992).
Fauna	The wildlife or animals of a specified region or time.

Term	Definition
Federally listed	Species formally listed as a threatened or endangered species under the ESA. Designations are made by the FWS or NMFS.
Floodplain	The lowland that borders a stream or river, usually dry but subject to flooding.
Flora	Plant life, especially all the plants found in a particular country, region, or time regarded as a group. Also, a systematic set of descriptions of all the plants of a particular place or time.
Forage	Food for animals. In this document, term applies to both availability of plant material for wildlife and crops grown to feed horses, cattle, and other livestock.
Free-right turn	An auxiliary lane that adjoins the traveled way of two separate roadways and enables a right turn to be made without a stop.
Freshwater	Water that contains less than 1,000 milligrams per liter (mg/L) of dissolved solids; generally, more than 500 mg/L of dissolved solids is undesirable for drinking and many industrial uses.

G

Term	Definition
Geographic information system (GIS)	A computer system that stores and manipulates spatial data, and can produce a variety of maps and analyses. GIS is used to set landscape-level planning objectives. GIS can do the following: 1. Assign information and attributes to polygons and lines, which represent relationships on the ground. 2. Update and retrieve inventory, mapping, and statistical information.
Grassland	An area covered with grass and grass-like vegetation.
Grade separation	A crossing of two highways, or a highway and a railroad, at different levels.

Term	Definition
H	
Habitat	The region where a plant or animal naturally grows or lives. A specific set of physical conditions that surround a single species, a group of species, or a large community. In wildlife management, the major components of habitat are considered to be food, water, cover, and home range.
Harm	Habitat modification or degradation that injures or kills wildlife by significantly impairing essential behavioral patterns that include breeding, feeding, or sheltering.
Holistic	An approach to ecology emphasizing the importance of the whole and the interdependence of its parts.
Hydrologic cycle	The sequence of conditions through which water passes from vapor in the atmosphere through precipitation upon land or water surfaces, and ultimately, back into the atmosphere as a result of evaporation and transpiration.
Hydrology	The science that studies the properties, distribution, and circulation of natural surface water and groundwater.
Hyporheic zone	The groundwater under a stream channel or floodplain that contributes water to the stream. Also contributes biologically, sometimes supporting an extensive biotic community.
I	
Impact	A modification in the status of the environment brought about by a Preferred Alternative.
Infiltration	To cause (as a liquid) to permeate something by penetrating its pores or interstices.
Insoluble	Incapable of being dissolved in a liquid.
Interchange	A system of interconnecting roadways in conjunction with one or more grade separations, providing for the movement of traffic between two or more roadways on different levels.
Intersection	The general area where two or more highways join or cross, within which are included the roadway and roadside facilities for traffic movements in that area.

Term	Definition
L	
Landform	A term used to describe the many types of land surfaces that exist as a result of geologic activity and weathering (for example, plateaus, mountains, plains, and valleys).
Leaching	To dissolve out soluble constituents from soil by percolation.
Left-turn lane	An auxiliary lane that adjoins the traveled way and is used for turning.
M	
Median	The portion of a divided highway separating the two traveled ways for traffic in opposite directions. The median width includes both inside shoulders.
Mitigate	To alleviate, reduce, or render less intense or severe.
Mitigation	Action taken to avoid, reduce the severity of, or eliminate an adverse impact.
N	
National Environmental Policy Act (NEPA) of 1969	Public Law 91-190. Establishes environmental policy for the nation. Among other items, NEPA requires federal agencies to consider environmental values in decision-making processes.
National Marine Fisheries Service (NMFS)	The federal agency that is the listing authority for marine mammals and anadromous fish under the ESA.
National Register of Historic Places (NRHP)	A listing of architectural, historical, archaeological, and cultural sites of local, state, or national significance, established by the Historic Preservation Act of 1966 and maintained by the National Park Service.
Native vegetation	Vegetation originating in a certain region or country.
Naturalization	To cause a plant or animal from another region to become established in a new environment or to adapt successfully to new environmental conditions.
Non-native	A plant that is not growing naturally in a particular place, and that has been introduced by an outside force or agent.

Term	Definition
Noxious weeds	Plants that may cause harm to collectors, or invasive exotics or parasites and their host plants that may harm the ecosystem or agriculture of an area.
P	
Paleontology	A science dealing with the life of past geological periods as known from fossil remains.
Particulate matter	Minute, separate particles, such as dust or other air pollutants.
Perennial	Lasting or active through the whole year. May refer to rivers, streams, or plants.
Permeability	The measure of the ease with which a fluid can diffuse through particular porous materials.
Policy	A guiding principle upon which is based a specific decision or set of decisions.
Predators	Any organism that exists by preying upon other organisms.
Prime farmland	Farmland that has the best combination of physical and chemical characteristics for producing food, feed, fiber, and oil seed crops and is also available for these uses. The land could be cropland, pastureland, rangeland, forest land, or other land—but not urban built-up land or water. It has the soil quality, growing season, and moisture supply needed to economically produce sustained high yields of crops when treated and managed—including water management—according to acceptable farming methods.
Primitive	An area that is not developed; a pristine natural area.
Programmatic	Of, having, advocating, or following a plan, policy, or program, as in a *Programmatic EIS*.
Public approach	An entrance to and/or from a highway, street, road, alley, etc., or dedicated public right-of-way (MDT, 1992).
R	
Raised median	A median which contains a raised portion or island within its limits.
Range	A large, open area of land over which livestock can wander and graze.

Term	Definition
Raptor	A bird of prey.
Rare	A plant or animal restricted in distribution. May be locally abundant in a limited area or few in number over a wide area.
Reclamation	Returning disturbed lands to a form and productivity that will be ecologically balanced.
Redd	A spawning nest constructed by a fish. A depression excavated in gravels where eggs are deposited.
Region	A large tract of land generally recognized as having similar character types and physiographic types.
Residual	Relating to the material left after weathering of a rock and removal of its soluble constituents.
Revegetation	The reestablishment and development of self-sustaining plant cover. On disturbed sites, this normally requires human assistance such as reseeding.
Rhizomes	A thick underground horizontal stem that produces roots and has shoots that develop into new plants.
Right-of-way	Strip of land acquired by legal means, over which utility corridors and access roads pass.
Riparian	Of, or pertaining to, the area surrounding the banks of a stream that supports vegetation dependent upon high levels of water.
Riparian area	Areas of land directly influenced by water or that influence water. Riparian areas usually have visible vegetative or physical characteristics reflecting the influence of water. Riversides and lake borders are typical riparian areas.
Road prism	This is the horizontal template of a road that includes the road running surface, cutslope, fillslope, and ditch.
Rumble strip	Cuts in the pavement of a roadway shoulder that when driven over, provide tire noise that is intended to alert the driver.

Term	Definition
S	
Sacred site	Any specific, discrete, narrowly delineated location on Federal land identified by an Indian tribe, or Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion; provided that the Tribe or appropriately authoritative representative has informed the agency of the existence of such a site.
Salmonid	Fish species belonging to the family Salmonidae, including trout, steelhead, salmon, char, and whitefish species.
Scoping	The process where the public provides comments to assist MDT in determining the range of proposed actions, alternatives, and impacts to be discussed in an EIS; includes public meetings and other outreach activities.
Secondary impact	An impact that does not directly result from implementation of a build alternative, but rather indirectly from project implementation. For example, construction of a new business along the route of a new highway.
Sediment	A generic term used loosely to describe silt or sand-sized particles that may settle out of flowing water onto the bottom of streams and rivers, which may cover gravels otherwise used by salmonid fish for spawning and rearing young. Sediments may also inhibit oxygen uptake by fish eggs and therefore reduce reproductive success.
Sediment/Sedimentary	Solid fragmental material, either mineral or organic, that is transported or deposited by air, water, gravity, or ice.
Semi-arid	A climate or region characterized by little yearly rainfall and by the growth of a number of short grasses and shrubs.
Sensitive species	Species whose populations are small and widely dispersed or restricted to a few localities. Species that are listed or candidates for listing by the state or federal government.
Sensitivity	The state of being readily affected by the actions of external influence.

Term	Definition
Shoulder	The portion of the roadway contiguous to the traveled way for the accommodation of stopped vehicles, for emergency use, and for lateral support of base and surface courses. On sections with curb and gutter, the shoulder extends to the face of the curb.
Sight distance	The sum of the distance traveled during a driver's perception/reaction or brake reaction time and the distance traveled while braking to a stop.
Site	In archaeology, any locale showing evidence of human activity.
Socioeconomic	Of or involving both social and economic factors.
Sound	Quantified using a logarithmic unit called a decibel and is typically modified (weighted) to account for human perception of sound. The weighted unit is shown as dB(A), which most closely approximates human hearing.
Species	A group of individuals of common ancestry that closely resemble each other structurally and physiologically, and in nature interbreed to produce fertile offspring.
Statewide-Important farmland	Farmland that is nearly Prime and that economically produces high yields of crops when treated and managed according to acceptable farming methods.
Steady-State noise level (L_{eq})	Used by FHWA and MDT to evaluate noise impact of transportation projects. The steady-state noise level evens out fluctuating sound over a stated time period, typically 1 hour and is shown as L_{eq}(h)
Subspecies	Any natural subdivision of a species that exhibits small, but persistent morphological variations from other subdivisions of the same species living in different geographical regions or times.
Superelevation	The amount of cross slope or "bank" provided on a horizontal curve to help counterbalance the outward pull of a vehicle traversing the curve.
Synergistic relationship	The simultaneous action of separate physical factors that when combined have a greater total effect than the sum of their individual effects.

T

Take	To kill or capture a species covered by the Endangered Species Act.

Term	Definition
Tap-root	A prominent and often bulky root that extends downward below the stem of some plants and has fine lateral roots. It often serves as a food storage organ.
Threatened species	Any species likely to become endangered within the foreseeable future throughout all or a significant part of its range.
Topography	The relative positions and elevations of surface features of an area.
Traditional cultural property	A term referring to a tangible site, district, structure, building, or object with defensible boundaries that is important to a contemporary human community and has been for 50 years or more, that has significance under one or more criteria of the National Register of Historic Places, and with integrity of location, design, setting, materials, workmanship, feeling, and association in the perspective of those who value the place.
Transpiration	The process by which water that is absorbed by plants, usually through the roots, is evaporated into the atmosphere from the plant surface, such as leaf pores.
Traveled way	The portion of the roadway for the movement of vehicles, exclusive of shoulders and auxiliary lanes.
Tributary	A stream or river that flows into a larger stream or river.
Turbidity	The amount of solid particles that are suspended in water and that cause light rays shining through the water to scatter. Turbidity makes the water cloudy or even opaque in extreme cases.

U

Upland	Land or an area of land lying above the level where water flows or where flooding occurs. Land that is generally dry, as opposed to lowland, meadow, marsh, swamp, and the like. See *riparian* for comparison.
U.S. Fish and Wildlife Service (FWS)	The federal agency that is the listing authority for species other than marine mammals and anadromous fish under the ESA.

V

Vegetation community	Species of plants that commonly live together in the same region or ecotone.

Term	Definition
Viable population	A population of sufficient size and distribution to be able to persist for a long period of time in the face of demographic variations, random events that influence the genetic composition of the population, and fluctuations in environmental conditions, including catastrophic events.

W

Term	Definition
Water Quality Limited Stream	A stream listed under the Clean Water Act as not fully supporting designated beneficial uses. It is for these water bodies that Total Maximum Daily Loads are required to be developed.
Watershed	The catchment area of land draining into a river, river system, or body of water; the drainage basin contributing water, organic matter, dissolved nutrients, and sediments to a stream or lake.
Wetlands	Lands or areas exhibiting hydric soils, saturated or inundated soil during some portion of the plant growing season, and plant species tolerant of such conditions (includes swamps, marshes, and bogs).

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Appendix G: Coordination Letters

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8, MONTANA OFFICE
FEDERAL BUILDING, 301 S. PARK, DRAWER 10096
HELENA, MONTANA 59626-0096

Ref: 8MO

March 27, 2001

Mr. Denny Mengel, Ph.D, CPSS,
Senior Ecologist
CH2M Hill
700 Clearwater Lane
Boise, Idaho 83712-7708

Re: Rockvale-Laurel EIS

Dear Mr. Mengel:

This is in response to your letter dated March 19,2001 requesting EPA to be a cooperating agency with the Montana Dept. of Transportation (MDOT) during the preparation of an Environmental Impact Statement (EIS) for the Rockvale to Laurel reconstruction project on US Highway 212.

The EPA is interested in providing meaningful and early input on environmental issues of concern for this project. We are particularly interested in helping to ensure that proper river, wetland, and surface and ground water quality, hazardous waste issues, and air quality protection considerations are incorporated into the Rockvale-Laurel project. The Agency, however, has resource limitations and other program commitments which will have to limit the degree and extent of EPA's participation in the EIS preparation process. These resource constraints and other program commitments make it difficult for me to agree to full fledged participation as a cooperating agency during the preparation of the EIS (see 40 CFR 1501.6(c)).

EPA will be reviewing and providing comment on the draft and final EIS's for this project in accordance with Section 309 of the Clean Air Act. The EPA provided EIS scoping comments for this project in August 2000. Mr. Steve Potts, EPA Montana NEPA Coordinator, attended the November 1, 2000 Rockvale-Laurel project scoping meeting and field trip, and will participate in the EIS preparation process and provide input and comment as resources, workload, and schedules allow. We will try to review and comment upon such preliminary EIS documents as much as our workload and schedules allow. We encourage you to send us the rough draft DEIS.

I hope you understand our resource constraints. If you have any questions or would like to discuss this matter further please feel free to call me at (406) 441-1123 ext. 238. Thank you for your consideration.

Sincerely,

John F. Wardell
Director
Montana Office

cc: Cynthia Cody, EPA, 8EPR-EP, Denver
Terry Yarger, MDOT, Helena
Dale Paulson, FHWA, Helena

A CENTURY OF CONSERVATION
1901 2001

Montana Fish, Wildlife & Parks

RECEIVED
APR 0 2 2001
CH2M HILL
BOISE

2300 Lake Elmo Drive
Billings MT 59105
Ref: hn026-01.doc
March 28, 2001

Mr. Denny Mengel, Ph. D., CPSS
CH2MHILL
700 Clearwater Lane
Boise, ID 83712-7708

Dear Mr. Mengel:

This is in response to your letter of March 19 requesting the Montana Fish, Wildlife & Parks (MFWP) be a member of the Interdisciplinary Team (IDT) for the Rockvale to Laurel, US Highway 212 re-construction project.

MFWP is currently signed on as a Cooperating Agency. As such, we will apply our expertise in fish, wildlife and recreational resource management in our review of the Rough Draft EIS. Our staff is also available on an Ad Hoc basis to provide specific input on issues and concerns related to those resource areas.

We can not commit, however, to be a member of the IDT because of the time commitment. We have a very small staff and a very full workload. We do not have authority to add staff to take on these worthy, but time consuming, activities. As I said before, we can and will provide reviews of pertinent parts of the process that deal with resources within our areas of expertise. Questions and requests for comment should be directed as follows: Fisheries- Jim Darling; Wildlife- Charlie Eustace; and Parks/Recreation – Doug Habermann. These gentlemen can be reached at our Billings office, or telephone 247-2940.

Thanks for the invitation.

Sincerely,

Harvey E. Nyberg

Harvey E. Nyberg
Regional Supervisor

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
215 NORTH 17TH STREET
OMAHA, NEBRASKA 68102-4978

RECEIVED
APR 0 2 2001
CH2M HILL
BOISE

REPLY TO
ATTENTION OF

March 23, 2001

US Army Corps of Engineers
Helena Regulatory Office
301 South Park Avenue, Drawer 10014
Helena, Montana 59626-0014
Phone: (406) 441-1375
Fax: (406) 441-1375

RE: Rockvale to Laurel, MDT Control No. 4070
Corps File No. 200090730

Mr. Denny Mengel
CH2M HILL
P.O. Box 8748
Boise, Idaho 83707-2748

Dear Mr. Mengel,

The Corps of Engineers will participate as a cooperating agency on the Interdisciplinary Team for the Rockvale to Laurel US Highway 212 reconstruction project. Mr. Todd Tillinger will represent the Corps, and should be contacted directly concerning any future meetings or review of plans and studies. Mr. Tillinger may be contacted at the phone number and address listed above.

Sincerely,

Allan Steinle

Allan Steinle
State Program Manager

CF:
Samuel Naseem, MDT
Joel Marshik, MDT

United States Department of the Interior

FISH AND WILDLIFE SERVICE
MONTANA FIELD OFFICE
100 N. PARK, SUITE 320
HELENA, MONTANA 59601
PHONE (406) 449-5225, FAX (406) 449-5339

M.17 FHWA Rockvale - Laurel

January 8, 2001

Denny Mengel
CH2M HILL
700 Clearwater Lane
PO Box 8748
Boise, Idaho 83707-2748

Dear Dr. Mengel:

This is in response to your letter dated December 21, 2000, in which you requested written comments from the US Fish and Wildlife Service (Service) regarding the Montana Department of Transportation's proposal to reconstruct US Highway 212 from Rockvale to Laurel in Yellowstone and Carbon counties, Montana (NH 4-1(21)42; Control No. 4070). The Service received your letter on December 28. We appreciate the opportunity to review this project proposal and provide early comments. These comments have been prepared under the authority of and in accordance with the provisions of the Fish and Wildlife Coordination Act (16 U.S.C. 661 et. seq.) and the Endangered Species Act (16 U.S.C. 1531 et. seq.).

Based upon a review of the preliminary routes proposed for this project, it appears the least desirable alignment from a fish and wildlife conservation perspective would be Alternative 4 (East Bench Alternative), which would involve two crossings of the Clarks Fork of the Yellowstone River. While often unavoidable, highway construction within floodplains and riparian areas and across large streams can adversely affect the overall health and function of those systems and the species that utilize them. Alternatives 1 and 2 (Far West Bench and Near West Bench alternatives, respectively) occur primarily in upland areas and appear much less likely to negatively affect resources for which the Service has jurisdiction.

Bald eagles (*Haliaeetus leucocephalus*) may occur in the vicinity of this project as nesting pairs, seasonal migrants or non-nesting residents. While at this time we do not foresee any substantive issues with this project in relation to bald eagles, any power lines in the vicinity, if not properly constructed, could pose electrocution hazards for this species. To conserve eagles, and other large raptors protected by Federal law, we urge that any power lines that need to be modified or reconstructed as a result of this project be raptor-proofed following criteria and techniques outlined in, "Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 1996." A copy may be obtained from: Jim Fitzpatrick, Raptor Research Foundation, Carpenter Nature Center, 12805 St. Croix Trail South, Hastings, MN 55033.

Prairie dog (*Cynomys* spp.) towns are considered potential habitat for black-footed ferrets

(*Mustela nigripes*). Considering the location of the proposed project, the potential for encountering prairie dogs appears low. However, if prairie dog towns are found to occur within the project rights-of-way, surveys for black-footed ferrets may need to be conducted and survey reports submitted to this office for review and concurrence within one year prior to any disturbance to the towns. Please contact us for guidelines for conducting ferret surveys if you determine that prairie dog towns or ferrets may be affected by this proposed project.

It appears likely that this proposed project may impact areas that are jurisdictional wetlands. If so, Corps of Engineers (Corps) Section 404 permits may eventually be required. In that event, depending on permit type and other factors, the Service may be required to review permit applications and will recommend any protection or mitigation measures to the Corps as may appear reasonable and prudent based on the information available at that time. Regardless, it would be prudent for the proposed alternatives to be designed such that they avoid and minimize wetland areas to the greatest extent possible.

The Service appreciates your efforts to incorporate fish and wildlife resource concerns, including threatened and endangered species, into your project planning. If you have questions regarding this letter, please contact Mr. Scott Jackson, of my staff, at (406)449-5225, ext. 201.

Sincerely,

R. Mark Wilson

R. Mark Wilson
Field Supervisor

Copy to: FWS-ES, Billings Suboffice

United States Department of the Interior

FISH AND WILDLIFE SERVICE
MONTANA FIELD OFFICE
100 N. PARK, SUITE 320
HELENA, MONTANA 59601
PHONE (406) 449-5225, FAX (406) 449-5339

M.17 FHWA Rockvale to Laurel

December 15, 2000

Terry Yarger
Montana Department of Transportation
2701 Prospect Avenue
PO Box 201001
Helena, Montana 59620-1001

Dear Mr. Yarger:

This responds to your letter dated October 11, regarding the proposal by the Montana Department of Transportation (Department) to reconstruct US Highway 212 from Rockvale to Laurel in Yellowstone and Carbon counties, Montana (NH 4-1(21)42; Control No. 4070). Your letter requested that the US Fish and Wildlife Service (Service) be a Cooperating Agency with regards to this project. The Service received your letter on October 13.

The Service agrees to be a Cooperating Agency for this project. As such, the Service will review and respond to documents required for compliance with the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et. seq.), and the Fish and Wildlife Coordination Act (16 U.S.C. 661 et. seq.).

The Service attended a scoping meeting for this project in Billings on November 1 and provided comments relative to environmental concerns associated with the Department's proposed route alternatives. In summary, it appeared at that time that the alternatives that avoided crossing the Clarks Fork of the Yellowstone or its floodplain were the least damaging to resources for which the Service has jurisdiction.

If you have questions regarding this letter, please contact Mr. Scott Jackson, of my staff, at (406)449-5225, ext. 201.

Sincerely,

R. Mark Wilson

R. Mark Wilson
Field Supervisor

CH2MHILL

CH2M HILL
700 Clearwater Lane
Boise, ID
83712-7708
P.O. Box 8748
Boise, ID
83707-2748
Tel 208.345.5310
Fax 208.345.5315

March 19, 2001

msPhail

Mr. Ray ~~McFail~~
U.S. Natural Resources Conservation Service
U.S. Department of Agriculture
606 W. Front
Joliet, MT 59041

Subject: NH 4-1 (21) 42
Rockvale to Laurel
Control No. 4070

Dear Ray:

This letter is to request, on behalf of the Montana Department of Transportation (MDT), that the U.S. Natural Resources Conservation Service (NRCS) be a member of the Interdisciplinary (ID) Team for the Rockvale to Laurel, US Highway 212 re-construction project. We have previously requested (September 19 letter attached) that your agency also be a Cooperating Agency on this proposed project in accordance with the U.S. Department of Transportation Federal Highway Administration's regulations under the *National Environmental Policy Act* (NEPA, see 23 CFR 771.111(d)). The NRCS is regarded as having jurisdiction by law relative to your administration of the FPPA.

A written response to this Cooperating Agency and ID Team request is needed for the environmental documentation on this proposed project. This proposed project is now scheduled to be "Ready" for a review of the proposed project's plans, specifications, and estimates by August 1, 2003. MDT will provide a copy of the ROUGH DRAFT Preliminary Environmental Impact Statement on this proposed project for review by the NRCS as a Cooperating Agency. Your responsibilities as an ID Team member include participation in ID Team meetings and activities, review biological resources workplans, and provide review on the design, execution, and analysis of biological resource studies. Please provide your written response to be a cooperating agency by March 30, 2001.

Sincerely,

CH2M HILL

Denny Mengel

Denny Mengel, Ph.D., CPSS
Senior Ecologist

I'm writing to respond to your letter. Please consider me on behalf of the Natural Resources Conservation Service as the cooperating agency to be a participant in the Rockvale to Laurel, US Highway-212 reconstruction project.

A. Ray McPhail
District Conservationist
NRCS

Mengel, Denny/BOI

From: Heckenberger, Brian [bheckenberger@state.mt.us]
Sent: April 02, 2001 3:18 PM
To: Mengel, Denny/BOI
Cc: Reid, Tom; Yarger, Terry
Subject: CH2MHill 3/19/01 letter for MDT Rockvale to Laurel Project

Dear Mr. Mengel:

To summarize our April 2, 2001 discussion, this E-Mail is in response to a March 19, 2001 letter from yourself to DEQ's Tom Reid, Supervisor of the Water Quality Discharge Permits Section. Pertaining to the request for this Section's storm water discharge input into the planning, scoping, and EIS process for the proposed MDT Rockvale to Laurel project, the Section's Storm Water Program typically is involved with such projects through the submittal of a required application for authorization under the DEQ's "General Discharge Permit for Storm Water Associated with Construction Activity" (this General Permit has its own MEPA Environmental Assessment which typically pertains to authorizations issued under the General Permit). Information concerning construction activity storm water discharge permits, applications (including forms), and requirements are available on the DEQ website at http://www.deq.state.mt.us/wqinfo/5-3-1-6-12.htm <http://www.deq.state.mt.us/wqinfo/5-3-1-6-12.htm> . Documents on this website should assist MDT or their consultant in determining whether General Permit coverage is required, and how to go about completing and submitting the application package. Obtaining permit coverage, if necessary, is our primary comment with respect to any planning or potential environmental implications associated with this project at this time. Based on the submittal of required information in the application package, the DEQ may best assess the environmental implications and controls with respect to any regulated storm water discharges. The Storm Water Program's resources are set up largely as a permitting shop whereby we process large numbers of applications in a streamlined and relatively quick fashion. Regrettably, the Program has little available time to devote to project-specific planning activities prior to the submittal of the application. Also, construction storm water permitting requirements are undergoing changes in the next year, likely resulting in a more streamlined process due to a significant increase in workload. Please call me at (406) 444-5310 if you have any further questions.

Brian Heckenberger
Storm Water Program Coordinator
Water Quality Discharge Permits Section
Water Protection Bureau
Permitting and Compliance Division
Montana Department of Environmental Quality

MDT attempts to provide accommodation for any known disability that may interfere with a person participating in any service, program or activity of the Department. Alternative accessible formats of this information will be provided upon request. For further information, call 406.444.7228 or TTY (800.335.7592) or call Montana Relay at 711.